Covering ALL Acorn machines
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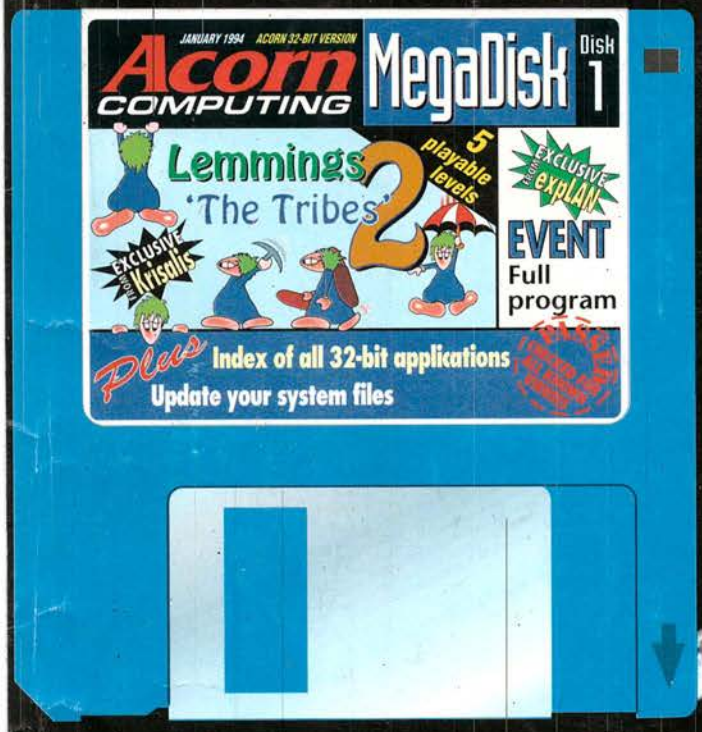
TWO PACKED DISKS

CD ROM REVOLUTION

Revealed – what's available for your machine *now*



LEMMINGS 2

The Tribes have arrived!

PRIME SOLVER
Build your own gadgetry

SMALL
Survive the maze if you can

EVENT
Keep your diary up to date

europress ENTERPRISE
9 770967 525021 01
JANUARY 1994 Vol.11 No.12 £3.95 Hfl 17.95

ARCHIMEDES • A3000 RANGE • A4000 • A5000

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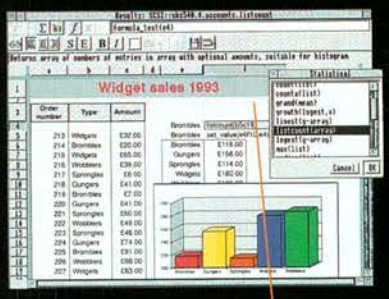
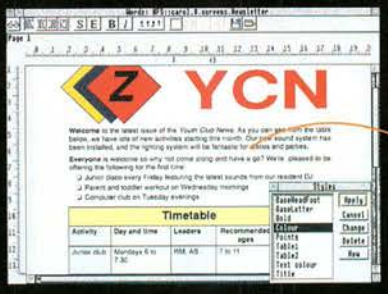
Resultz is the power-packed spreadsheet that gets the answer first. Whether you're working with statistics, finance or arithmetic, Resultz and its unequalled range of functions can provide the answer easily and quickly. Boost your productivity for £99.

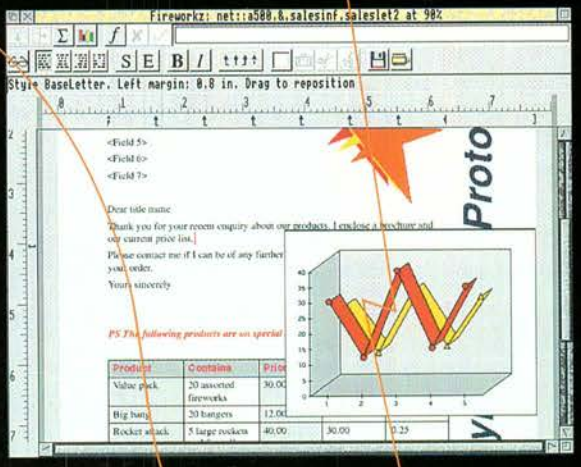
resultz



wordz ©® TM 1993...4...



Wordz is the dedicated word processor, feature-packed but easy to use. Click on a button or drag an icon to design good-looking documents. Text and tables are easily styled, live on the page. At £79 it's the affordable option for documents with impact.



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COLTON software

2 Signet Court, Swann's Road,
Cambridge CB5 8LA
Telephone 0223 311881
Fax 0223 312010
Email info@colton.co.uk

February issue – on sale 7 February 1994

CD-rom Revolution

WITH the advent of fairly low cost CD-rom drives we're due for an explosion in available software. Take a look at what's available now – on Page 50.

REGULARS

Comment 17
People love to put labels on things but that can seriously hamper the way a product is viewed, Steve Turnbull investigates.

News 19
All the latest about products and events taking place in the fast changing world of the Acorn computer.

Public Domain 39
Teri Paul is back again with her pick of public domain and shareware programs to enhance your computer.

Problem Solved 43
Our technical editor opens his mail and shares the secrets behind some of those tricky hardware problems.

TechForum 63
Are you an expert programmer? Our hints and tips series is for you with ideas to help you work.

Mad Hatter 68
Our adventure games wizard guides you through the intracacies of Fish! Plus lots more on Elite for 8 and 32-bit owners.

Essential Music 76
In the final of his series, music expert Ian Waugh rounds up what he's covered on sequencing with more power tips.

Body Building 92
Mike Cook returns to his computer-monitored telescope with bright ideas on how to drive the data display with only eight lines.

Letters 96
This is your opportunity to voice your news, ideas and views on everything in the Acorn world from viruses to joysticks.

REVIEWS

8Mb Upgrades 26
Find out just how much memory you can cram into your A5000, how easy it can be and how much it will cost.

Learning Curve 33
We survey the latest in educational software for the Acorn computers:
- Aztecs
- Primary Nature
- Cistercian Abbeys
- Letters

Expert Systems 46
Now you can enter the mystical world of artificial intelligence with this unique package for the 32-bit Acorn machines.

Plot 65
We check out this new application that can help you display statistical information in the way that suits you best.

Screenplay 71
All systems go as we look at the latest for 32-bit Acorn machines:
- Carnage Inc
- Asylum
- Play it again, Sam 3
- The Exotic Adventures of Sylvia Lane

Sound Advice 89
A new composition package from a new company, we take it to pieces to see how it fares in the world of music.

FEATURES

MegaDisk 4
Check out what's in store for you this month on the two best cover disks available for the Acorn 32-bit RISC OS range.

BBC Disk 10
Full details on what's on the subscription disk for the 8-bit BBC Micro this month – and how to use it.

CD-Rom Revolution 50
Find out what's good and bad on CD-rom. Here's a huge round-up of the packages you can buy now.

Comms 59
In the final part of his series on Comms, Clem Vogler takes a look at the two ways you can get fax technology on your Arc.

THE MEGADISKS

Britain's best Acorn coverdisks contain hours of fun and a host of useful utilities linked to our editorial features to make the magazine come alive on your desktop!

Full details about the packed Megadisks – see Page 4.

- **Lemmings 2 'The Tribes'**
  A wonderful world of silly games
- **Event**
  A complete package to plan your new year
- **Prime Solver**
  More gadgets than you can shake a stick at
- **Small**
  A terrifying adventure into your own mind
- **Graphics**
  Mike Goldberg's second leap into easy morphing
- **Survey '94**
  Answer the questions and you could win some dosh
- **Readers Programs**
  Three packages written by you for you

Subscribe now! – See page 31

SUBSCRIBE to *Acorn Computing* and you'll get an amazing value-for-money deal that beats all our rivals: Not only do you get a whole year's-worth of issues for LESS than any other Acorn magazine, 32-bit owners get TWO disks every month.

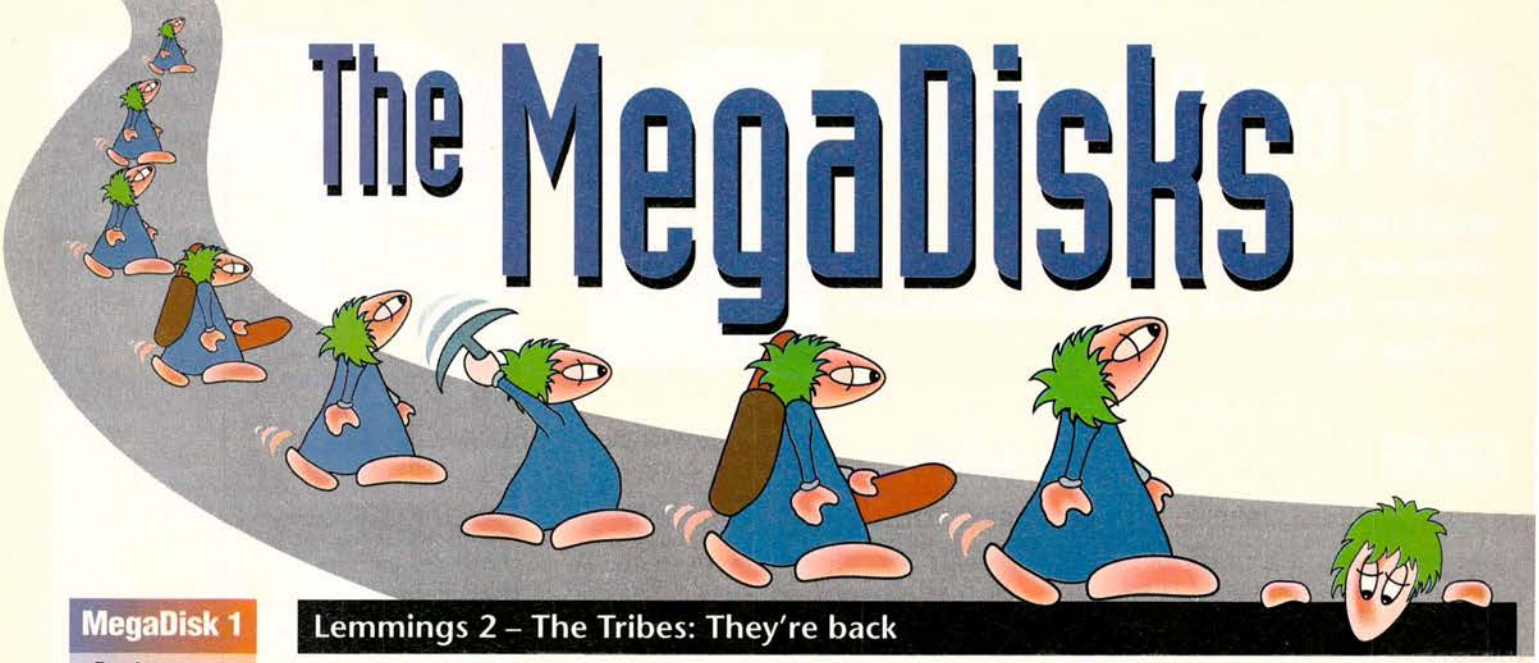
See Page 31 for details of this unbeatable offer.

IF you have a BBC Micro, *Acorn Computing* is the only newsstand magazine that still supports you. Every month we have complete programs written specially for you and your computer.

To subscribe turn to Page 31.

GET YOUR NEWSAGENT TO RESERVE YOUR COPY NOW – SEE PAGE 48

The MegaDisks



MegaDisk 1

- Event
- Lemming Tribes
- Reviews Index
- !System, !Scrap and !SysMerge

MegaDisk 2

- Account
- BirthdayBook
- Euro Time
- PrimeSolver
- Small
- Survey
- 8-bit programs
- 32-bit programs

Lemmings 2 – The Tribes: They're back

NOT only are that tribe of troublesome creatures back, but there are more of them. In fact there are 50 different Lemming skills to learn and use in a host of treacherous, seemingly impossible, situations. However, you will need access to a 2Mb machine to play this.

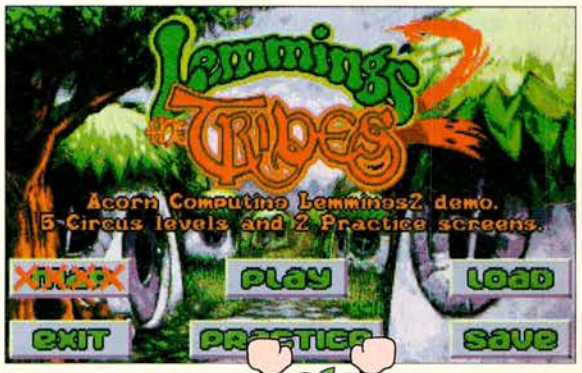
The special version of Tribes on this month's MegaDisk comes with two worlds to practice your Lemmings' special abilities: Medieval and a seasonal Polar region. You can play around to your hearts content here as there is no way out. When you feel ready then there are five screens to capture your imagination. Remember, be lateral in your thinking, there is always a way out ...

The screen layout is slightly different from the original and you can scroll up and down by moving your mouse on the playing area. There are different controls, too. You can fast forward but you also have a fan at your disposal.

Try using the wind machine to increase the swing of chains or blow some flying Lemmings around – I bet that comes in useful. When you've mastered the demo, there is the full version awaiting courtesy of Krisalis (0709 372290) for £29.95.

Lemming 2 The Tribes is mouse controlled, but there are some key controls which may come in useful:

F0-F8	Select skill
Z/X	Icon left/right
F9	Toggle music on/off
F10	Sound volume down
F11	Sound Volume up
S	Lock vertical Scroll



● *A special version just for you*

Small: A lesson in adventure

THIS is the first game from Virgo Software (061-456 0009) and was reviewed in the Special '93 issue of Acorn Computing. Small is set in a world of mazes and will work on a 1Mb machine but you may have to change to Mode 12 to allow more memory for the game to run on.

The game features some very special texture-mapped images and 95 per cent of the graphics were created using Clares' Illusionist package. As punishment for your arrogance and to teach you humility, the Gods have shrunk you to a microscopic size and cast you deep into the labyrinth realm of your mind.

Armed only with a handful of *star shots* you face vicious *arachnids*, *hermits* and *keepers* relentlessly determined to halt your progress, and fiendish puzzles to test your ingenuity. Not to mention the heads, rocks, and fire spurts.

To return to normal size you must escape from an expanding web of ever more complex mazes, before time or energy runs out. Shoot the bouncing balls or drink the potions to replenish your energy, but in this world everything is against you. The top of the screen shows your score and i n the top right a map of your current maze is drawn as you explore. The bars below this represent your status as to time, ammunition, bombs and energy. Remember, shooting the bouncing spirit balls increases your energy level.

● *I haven't even been anywhere yet*

Keys

Z/X	Rotate left or right 90°
Spacebar	Move forward one square
Return	Fire
Control	Drop bomb
Escape	Abort
Q	Sound on/off
S	Internal speaker on/off
P	Pause

Event: Get organised

THIS useful desktop diary application comes from ExpLAN (0822 613868) and usually costs £24.95. This is the complete software but it only works between 1 January and 31 March 1994. For those months you can access up to 800 appointments, comments and events easily and intuitively.

You view a day's events by clicking on that date in the calendar window or opt for a month view for a wider perspective. Clicking on an arrow on the small calendar or on one of the outer years in the large calendar changes the year.

The style of presentation of the events can be changed by using one of the three buttons down the left of the screen, the default method is to show all events with one day to a window. You can also choose to see a week's appointments using the middle of the three icons, or both styles at once with the bottom icon.

To add a new event bring up that day's page and select the event from the menu. Items can be repeated at various intervals - birthdays and anniversaries repeat every year automatically, the others are more flexible. There are seven sorts of repeat in all:

Yearly	Every year on the same date
Monthly	Every month on the same date
Monthly from the start	Such as each first Tuesday
Monthly from end	The last Thursday
Weekly, daily	For example, every 3 days or the first Tuesday of every other month
Pattern	Put a "." for a day to miss and a "*" to hit. Useful for shift working

With the exception of specific reminders and Day Notes, the items can also have reminders attached to them.

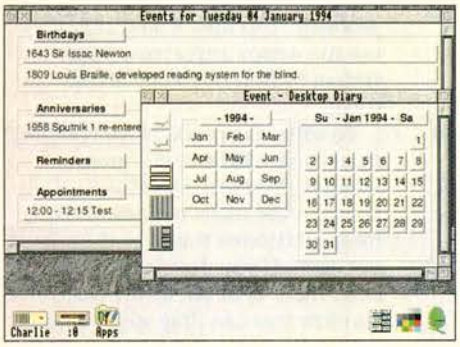
To alter or delete an existing event, click on it to highlight it and follow the menu through Selected to find the relevant action. Multiple selections in a single window are possible.

To print the diary, or export the information, follow the Print or Extract entries. Set the range of dates to be dealt with – the dates are inclusive – by adjusting the day number. The date will update as you go and the types of items you want are included in the end result.

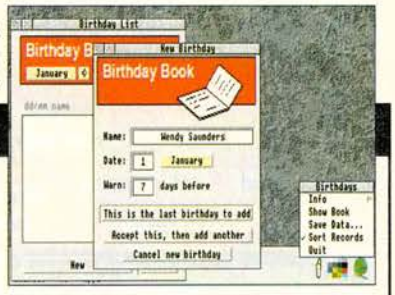
For printing you'll need to set the orientation for the printout and how many diary pages to include on a sheet. To produce two A5 pages on A4, select landscape, 2 columns, one row and one day per page.

The default settings of portrait, 2 columns and 2 rows will produce four A6 on A4. For extracting the data you need to select the file format for the end result.

Finally, you can search for items to a maximum of 32 characters. This will result in a new window with a list of dates. Click on one of them to bring up that day's events in full.



● *Organisation at your fingertips*



● *There's no excuse for missing that birthday now*

Birthday Book: The RISC OS 2-friendly version

A FULLY RISC OS compliant birthday diary which can hold up to 546 birthdays, each of which can be set up to warn you of the impending event. You can decide how far in advance you want to know and it is much better than using Alarm because of its design.

There are two sets of icons – a 3D and 2D set – the 3D set looks better but only works on RISC OS 3. You must copy Birthday Book to another disk to be able to save any new birthdays.

Birthday Book will be loaded automatically the first time the directory viewer is opened. When auto booted, an immediate check is performed on the birthdays, and if one is imminent a warning window will appear.

There are four options on the iconbar:

Show book Open the birthday book. Normally this would be the current month.

Save data This option is needed to update the birthday book on disk. Note that the information is not automatically saved, but you are warned before quitting if there is any unsaved data.

Sort records Should normally be left untouched. Normally there is a tick by the side, which indicates the records will be sorted before being displayed in the book. This option should only be turned off when you have a lot of records, to speed up the updating of the windows. When left off the birthdays are displayed in the order they were entered in.

A tutorial is supplied within the Help file on the disk so you can set up the program to your liking.

Simon Weaver

Getting started with the MegaDisks

THE programs on these disks are stored in a highly compressed format which sometimes enables as much as 1.6Mb of programs and data to be stored on a 800k floppy disk

The procedure for running the programs is very straightforward and does not require learning any special methods or techniques.

Switch on your Acorn micro, put the disk in the drive and click the drive icon. Now double-click !ACmenu – there's a short pause while it scans the archive then it displays a window of the contents. You can treat this new window like any other one for viewing disk contents, you can run programs and open directories by double-clicking them.

Large programs must be unpacked by dragging on to a separate disk before being run. Some may have an !Install program that will do it for you.

We recommend that you always read the !ReadMe files or access the help information via the Help button.

FAULTY DISK?

If either of your cover disks has a physical fault – doughnut won't rotate in the sleeve, disk errors and so on – please return it for replacement to:

PC Wise Ltd
Dowlais Top
Business Park
Dowlais
Merthyr Tydfil
Mid Glamorgan
CF48 2YY

If there seems to be a fault with one of the programs please contact us by post describing your machine set-up and exactly what happens when you run the program.

PrimeSolver: An incredible machine

WHO remembers Vision On with the wonderful doorbells contrived with moving balls, egg-laying chickens, pulleys and cogs? Well, Minerva (0392 437756) have just launched PrimeSolver, the latest in their education range, complementing PrimeArt and PrimeWord.

The full version of PrimeSolver costs £79.95 and is a simulator which allows you to create and/or solve mechanical problems using nearly 60 different tools and objects. On the educational side this promotes goal-oriented logical thinking as well as encouraging group discussion, building communication and team skills.

Although aimed primarily at the Modelling/Handling information strand of the National Curriculum at KS2/3/4, this software has a broad range of possible applications and problems can be designed which are suitable for use from year 2 up to university level.

But above all, PrimeSolver is fun and a challenge to anyone who loves logic puzzles and lateral thinking.

PrimeSolver will be launched at the BETT show in January but there is a special version on this month's MegaDisk with a series of puzzles created just for Acorn Computing readers. In the full version you can create your own devilish designs or use the program to test an idea or concept.

For best results use Modes 20 or 27. There is a time-out which will stop the demo after a reasonable period. If this happens you can restart it by simply running the software again.

To solve the puzzles put before you there is a range of tools to achieve your objective. There is often more than one solution and the program will tell you just how long you've taken to solve each poser. A word of advice – watch out for red herrings.

To use the software, double-click on the icon and then on one of the problem files. The first problem in the file will be loaded and presented on the screen. The main window shows the problem while to the right is a tool window with the resources at your disposal for the problem. You may find it useful to use the Acorn interactive help system to find out more about them.

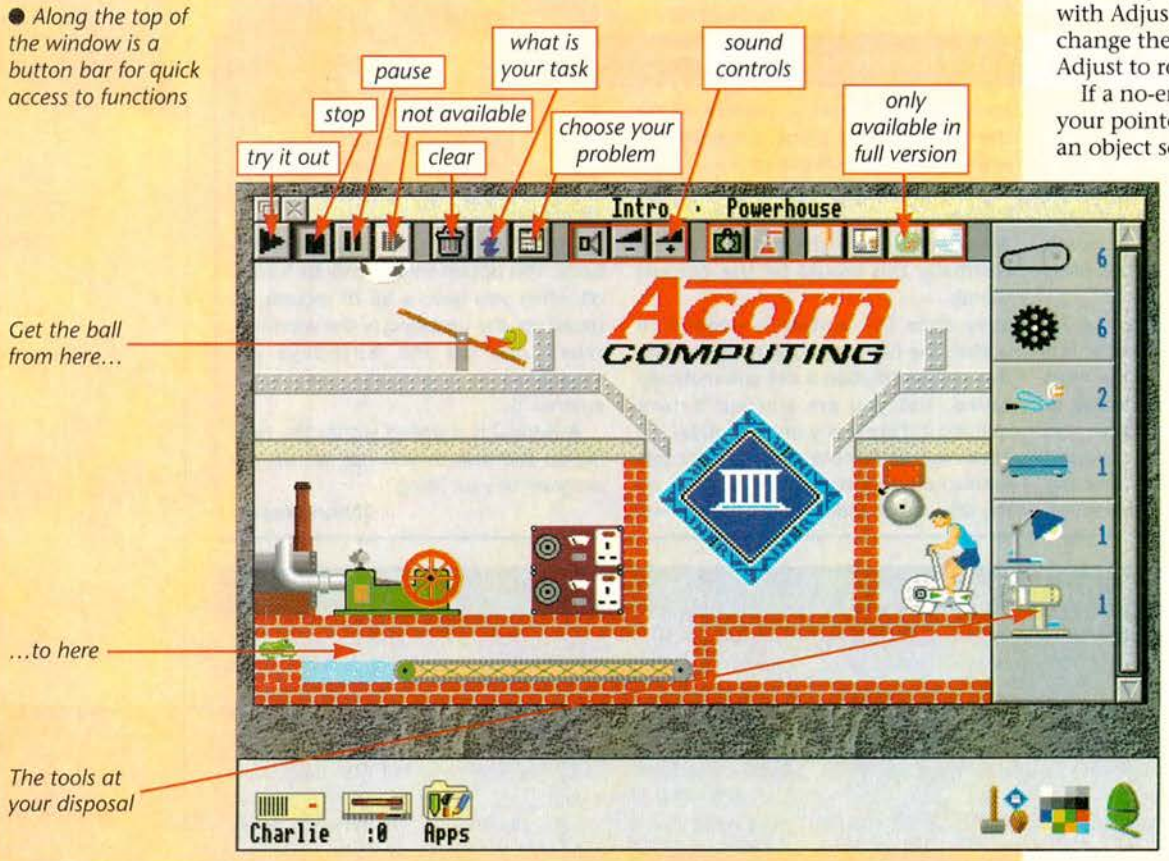
● *How would you solve this conundrum?*

To solve the problem, drag objects from the toolbox to the main window. You can also move them about in the main window once you have positioned them, or drag them out again if you decide you don't need them after all. In the main window you can drag some objects with Adjust – such as piping – to change their size and double-click Adjust to rotate them.

If a no-entry sign appears over your pointer, you are trying to put an object somewhere where it won't fit. To position string, electric cables and belts, drag to the start point and then click on the end point. For string, you may click on up to two pulleys in between. Notice how the pointer shape tells you where you can and can't end a belt, cable or rope.

To see what happens, click the start icon on the button bar. If you have got it right, the problem will be solved, if not, press the stop icon and try again. If you get too frustrated the solutions to the Intro puzzles are in the ReadMe file. However, there are some others for which you are well and truly on your own. Good luck.

● *Along the top of the window is a button bar for quick access to functions*



WIN UP TO £200

SURVEY

Featured on this months disk is another great Acorn Computing Survey. Fill in your answers and return the saved data file on a separate disk.

If you answer the competition questions correctly you could win a £200 prize or one of five £10 prizes.

Send your answers to: Acorn Computing, Europa House, Adlington Park, Macclesfield SK10 4NP.

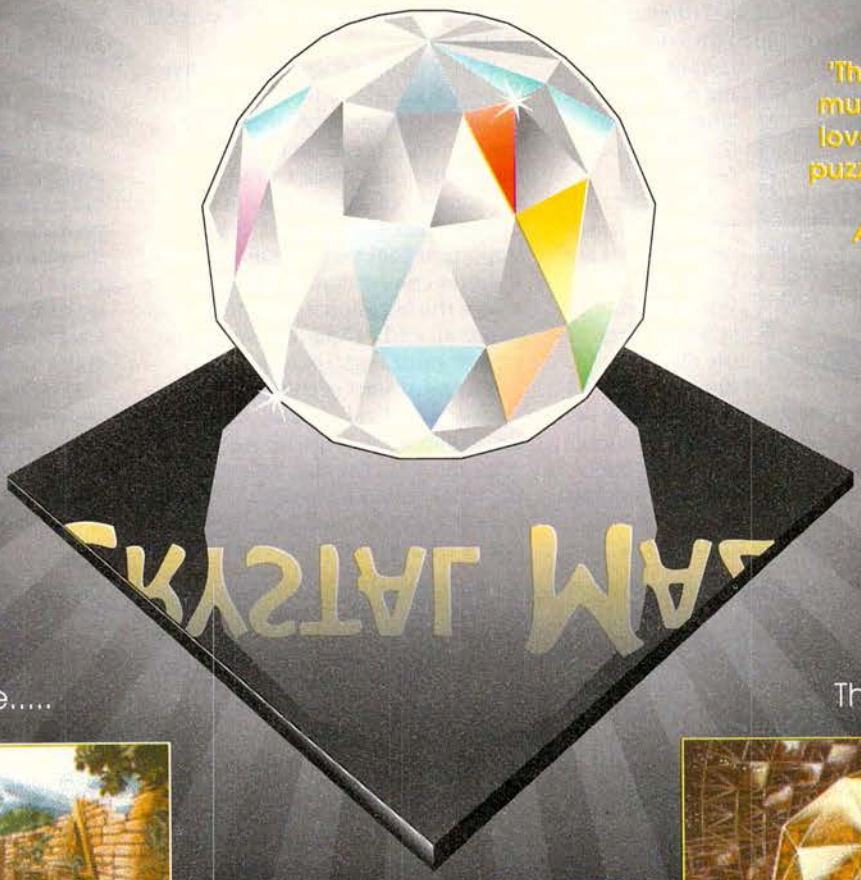
'The Crystal Maze is fantastic. The graphics and sound are stunning, the puzzles and games are very playable and challenging, and the presentation and packaging are of the highest standard. What's more, it provides all the excitement and entertainment of the TV show.'

RISC User, December 1993

THE CRYSTAL MAZE

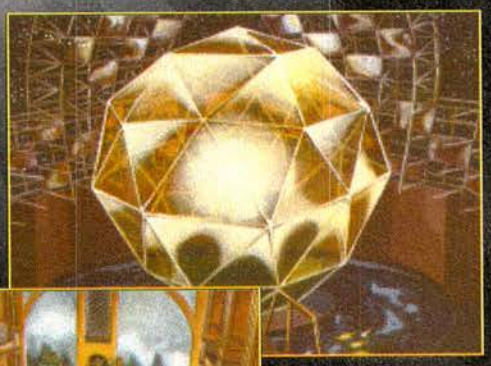
The fastest selling Acorn product Christmas 1993 Available now!

'The Crystal Maze is a must for everyone from lovers of mind-bending puzzles to joystick-frenzy enthusiasts'
Acorn Computing October 1993



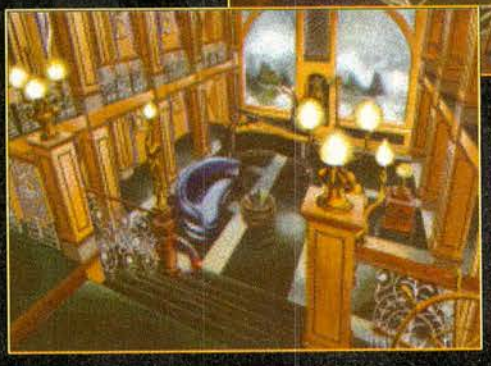
Into the Aztec zone.....

The final challenge!



Now you can play TV's No.1 Adventure Game

The Crystal Maze is available exclusively for Acorn 32 bit computers.



Try your hand at a game of skill ....

The Ocean zone contains new challenges ....

The Crystal Maze is a Chatsworth Television production for Channel 4 based on ideas by Jacques Antoine © 1990

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Please send me ___ copy of The Crystal Maze® at £39.95 inc VAT

Name _____ Visa/Access: _____

Address _____ Exp. Date: _____

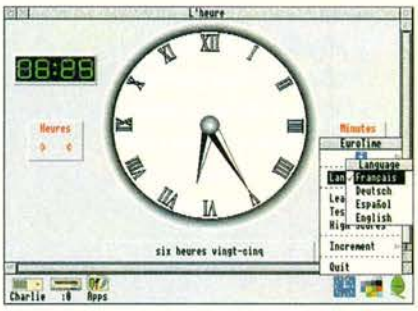
_____ Post Code _____ Signed _____

EuroTime: À quel heure?

EUROTIME is a multi-tasking RISC OS version of a suite of programs for learning how to tell the time in French, German, Spanish and English , originally published for the 8-bit BBC Micro in *The Micro User* in January 1991.

Now all four original programs have been combined into one: You simply choose the relevant language from the main iconbar menu.

● *Learn the time in four languages*



The other principal options on this menu are Learn and Test. While learning, you may alter the displayed time either forwards or backwards by clicking on the appropriate arrows. For minutes, an increment of either 5 or 15 may be chosen by clicking on the required option in the Increment sub-menu.

The time shown on the clock face is given in words at the bottom of the window in conversational 12-hour format only. There is also a green digital 24-hour display which changes to yellow or blue to indicate that the textual version contains the word for midday or midnight respectively in the current language.

When testing yourself, you have to type the time in words in the chosen language. The necessity to use the word for midday or midnight is indicated by the appearance of either a sun or a moon in the background. It is important that you type all answers in lower case, except in German where the occasional capital letter is required, and in Spanish where the answer must begin with a capital.

You must start each Spanish answer with *Es el..., Es la... or Son las...* as appropriate, whereas you must not type the equivalent of *It is...* in the other languages. Superfluous spaces will be stripped out of what you type. A correct answer will raise the flag slightly, and if all 10 answers are correct, the flag will reach the top and the clock will chime.

When a wrong answer is entered, the correct one will be displayed in a window, and you must click on OK before you can continue. It is not possible to change language or to choose Learn until the test has either been completed or abandoned.

A perfect score of 10/10 will give you the opportunity of entering your name in the High Score table, provided you have beaten the longest recorded time. If you wish, a new High Score table can be created by running the Basic program CreateHS which can be found in the application directory.

It may be necessary to edit the eighth line of this program to suit your current filing system, disk drive and directory. Note also that this operation re-initialises the High Score table for all four languages.

Malcom McKay

Don't miss the extras!

ACORN COMPUTING is selling like mad these days, so why not subscribe and make sure of your copy. And if you have a 32-bit machine you get an extra bonus – two super disks every month.

Account: Keep track of your bank statements

THIS program will help you know exactly how much or how little is left in your bank account, and it only takes up just over 320k for about 4,000 transactions. The basic theory is when you get a statement, type the details in. Account will tell you if a transaction has not been cleared, by putting a U before the date on the main display. Then, enter every subsequent transaction you make. When the next statement arrives, amend the accounts if necessary – usually only the dates will need to be changed.

Load the program in the usual way, after a short pause an icon will appear on the right hand side of the iconbar. You'll need to create a new set of accounts via the iconbar submenu. In future you can load your accounts, by double-clicking. Of course this will only work if the filer has seen !Account before. Alternatively, load !Account, and then drag the file to the iconbar.

Once you've created or loaded an account, the main window will appear. This displays the transactions 10 at a time, in pages. You can change page by clicking on one of the four icons in the bottom right corner of the window. You can add, amend or delete transactions by clicking on *Update account*.

Adding is simple. Click on the *Add* icon in the Update window. You can set the date in the same way as in !Alarm. Clicking on the Credit icon will toggle it between Debit and Credit. A transaction can also be toggled between cleared and uncleared, by clicking on the tick/cross.

If you click Menu over Code, a list of codes will appear. If you need to, you can alter this list. Enter the rest of the details and click OK. The transaction will automatically be inserted in the correct place.

To delete a transaction, click on *Delete*, and on the required record on the main display. The transaction will only be deleted if you then click OK. You can change your mind by selecting another record, or by clicking on Cancel.

You can *Amend* a transaction in a similar way. You will normally need to use this when you receive a statement, to alter the date. Remember also that everything listed on a statement has been cleared. The transaction will be moved to the correct place for the date.

Accounts
Account number: 123456 12345678
Account name: Mr A N Other
Total: £133.14
Available (inc. overdraft): £333.14
1/3
Date Code Description Debit Credit Balance
13Jan93 CSH Transfer 53.17 53.17
47Jan93 VIS Saloon, Fowey 12.63 40.54
18Jan93 CSH Hole in the wall, Hull 10.00 30.54
153an93 CHQ Beorn Computing 34.95 -4.41
31Jan93 SAL Salary 254.10 249.69
5Feb93 CHQ Alisdair Millard 24.95 224.74
12Feb93 VIS Roxy Cinema, Poole 3.35 221.39
23Feb93 CHQ Sunny Hols 149.63 71.76
24Feb93 CSH Hole in wall, Batwick 20.00 51.76
25Feb93 VIS Mick's Bar, Ibetha 14.87 36.89
Update account
Page
First page
Last page
Charlie
Apps

● *Keep control of your money*

If you realise that there is a mistake in the name, number or overdraft amount, click Menu over the A/C icon, select Details and alter the data accordingly.

You can save your records in the usual way as a text, or Accounts type file. Note that only Accounts files can be reloaded into this program. If you have RISC OS 3, when you drag the file icon it will be solid, as seen in !Edit. RISC OS 3 users may also notice that the main window iconises on to Pinboard with its own icon. Printing is also easy. Make sure a printer driver is loaded, and click on the Print icon from the main Account menu.

Alisdair Millard

PowerCarols: 32-bit music

SPACE restrictions have meant that we have been unable to squeeze PowerCarols '93 on to the disks. This seasonal offering is PD and was written for Acorn Computing readers by Different Ideas Music. If you'd like a copy of the 32-bit version send a formatted disk and a SAE to Acorn Computing, Europa House, Adlington Park, Macclesfield SK10 4NP.

Next month

OUR February issue – on sale 7 February – will bring a classic conversion to the Acorn via Renegade – **Sensible Soccer** as well as some very special interactive educational programs for a range of ages and interests.

There will only be one MegaDisk from February onwards and we are reverting back to this and a cover price of £2.95 now that Christmas is over. If you enjoyed having two MegaDisks each month, remember that subscribers get this opportunity. For further details turn to page 31.

Following TALKING PENDOWN
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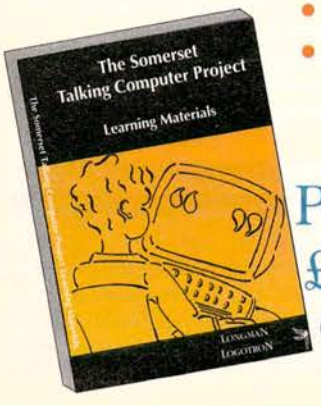
- a résumé of the work undertaken in Somerset;
- the photocopiable phonic-based materials;
- advice about how to prepare, begin and proceed with the work;
- suggestions for monitoring progress;
- ideas for extending the work with pupils.



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Paragon Designer: More of the same only different

HERE is the screens designer promised you from last month for The Paragon. It is simply an enhanced version of the designer I needed to create the four levels that were featured last month. There are extra levels included this month too: The first is *Tricky* and the other is called *TwoPlay* and is particularly lethal because it cannot be completed without the help of a friend.

The screens are designed individually in blocks of four and should be called *scr1*, *scr2*, *scr3* and *scr4*. The enormously useful utility – M/S – will merge these four screens into one file and ask you for a title and the designer's name.

Once merged, you have no need to keep the individual screen files as they can be recreated using the other facility of M/S: Its split option.

So, use M/S now to split one of the supplied screens, say *origins*. Then load and run Design, PAGE must be set to &1200 when you do this.

At the prompt press *Y*–you do want to load a screen–followed by the filename *scr1*. You now have the option of keyboard or joystick. Select whichever you prefer. The screen will now be drawn as in the game, less the tops of water and acid, and Z, X, :, / will move a flashing cursor around the screen (if keyboard was selected) and Return will select. On the joystick, fire selects.

Move the cursor over one of the guards other than the middle one. The other end of the guard's route flashes. Shift+f1 removes the last guard positioned, pressing it three times clears all the guards except the middle one who is the guard that chases you. He always starts in the middle.

Shift+f0 removes the last player positioned, pressing it two times clears both players. Delete blanks the current sprite underneath the flashing cursor.

To add a sprite, press Space followed by left or right until the flashing cursor is over the sprite you wish to place. Press Return or fire to select. Move the cursor to where you want the sprite, and press Return or fire.

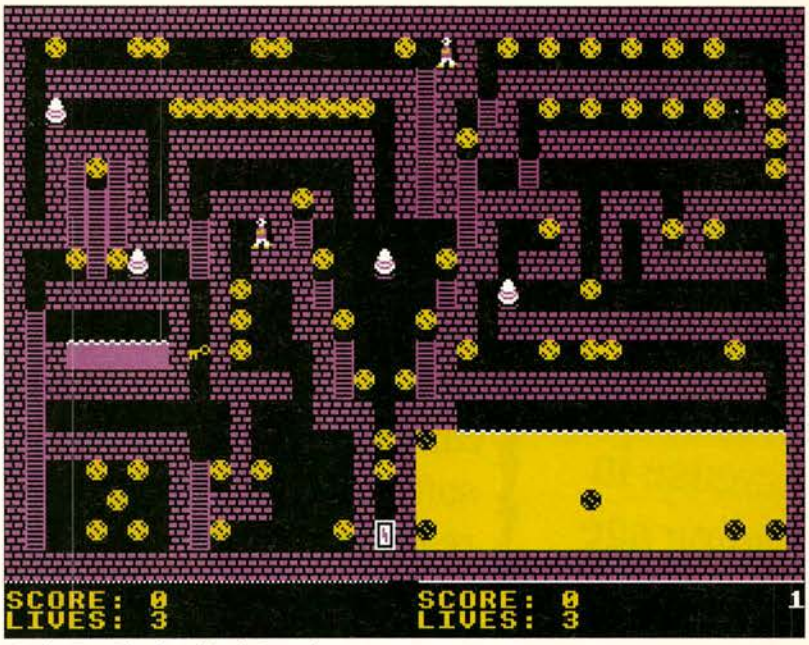
When you place a guard, it must be the guard's leftmost position, and you then have to move the cursor right to select the end of the path.

You can only place one key, one chute, two players and three guards and all these sprites should be placed on the screen otherwise it will not be completable or peculiar things will happen. You cannot place one sprite over another sprite with the exception of coins which can go in water and the middle guard over which anything can be placed.

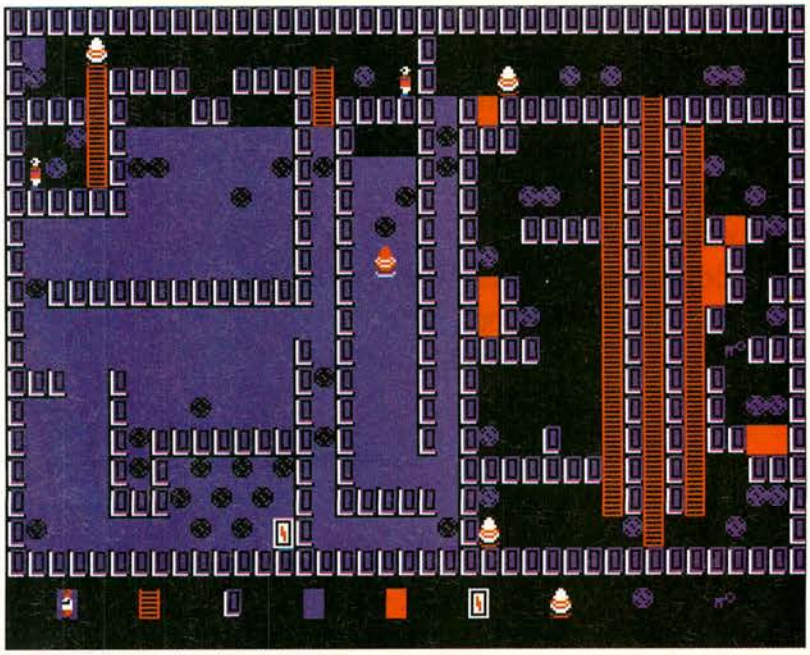
Escape at any time will clear the current operation, clear the screen and redraw it. Press Shift+f9 to save the screen. Entering a blank filename will cause the program to exit without saving, so be careful not to do this by accident! The filing system you entered the program with be re-installed despite the fact that CFS is initiated to free memory locations &E00 to &11FF inclusive so they can be utilised on the Model B.

Anything I haven't mentioned you should pick up with a bit of trial and error. Happy designing!

Mark R.Bannister



● *The TwoPlay level in during play*



● *Creating a level in the designer program*

Wanna sell some software?

Acorn Computing – the only newsstand magazine continuing to support your BBC Micro/Electron – is always on the lookout for good quality software to feature on the 8-bit subscription disk.

If you think your program has got what it takes just send it on disk to:

BBC Disk Submissions, Acorn Computing, Europa House, Adlington Park, Macclesfield SK10 4NP.

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Lots more music

COURTESY of James Coates of Different Ideas Music we have a selection of four compositions which all run on the Hybrid Music 5000 system – we hope you enjoy them.

FOR ADFS ONLY

SRAM Splitter: Taking the axe to sideways ram

I HAVE countless numbers of utilities written for the sideways ram of my BBC Master 128. Some small, some large, but none actually use the entire 16k of one sideways ram bank. This utility is designed to help.

Taking up less than 1k of a sram bank, it will allow you to run up to 16 different sram utilities in one bank simultaneously. There's an example on the disk called *SPutils*. Load it into sideways ram using *SRLOAD and do a hard reset.

Type *ROMS to see that it is only taking up one bank. Typing *HELP will show that you have three utilities installed. Before I explain how to use the facilities in *SPutils* I'll give you a quick guide to programming with the SRAM Splitter. The control program on its own is supplied as *Split* and the source code is *SpltSRC*, just in case you want to change the osword or osbyte codes it uses.

To include a new utility, first run the program *Install* to find out the address you should assemble the utility's code. Then reassemble the code at the new address, save it to disk and re-run *Install* – hold down Space if you don't like the slow writing. Enter the filename of the code you just relocated and saved, and when prompted press Control+ Break. Your code should now be happily installed alongside SRAM Splitter.

Please note that polling interrupts don't work properly and you can't have more than one utility that re-directs the same vector unless the correct redirections are set up. The language entry point of your code is ignored but the service entry point is used as expected. Your utility is not permitted to use bytes of sideways ram beyond the length of the file saved–so include any workspace you need in the file length.

Pressing Return instead of a filename in *Install* will display the current table. OSWORD with A=20 reads the current table with this layout:

XY+0	Number of extra utilities (doesn't include itself)
XY+1	LSB of address of first utility
XY+2	MSB of address of first utility
	(... list continues until number in XY+0 is satisfied)
XY+?	LSB of next available location
XY+?	MSB of next available location

Osword with A=21 writes the sideways ram copy of the table. Layout as above.

Osword with A=22 returns the current bank which holds the *SRAM Splitter* in–you can only have one *SRAM Splitter* running at a time unless each version uses different osword and osbyte calls.

OSBYTE 100	X>0 turns off all utilities with exception to the splitter itself
	X=0 turns the utilities back on again

Mark R.Bannister

Making the most of SPutils

There are two utilities included in the SPutils. The first is called the *Speed Keys Controller*. It was originally designed to help the programming of Basic, but I have found it useful elsewhere.

When running, it gives the Control key the effect of slowing the processor down – this was from the BBC Basic 5 listing idea – and hold Shift+Ctrl to pause the listing as usual. I have found that Control also slows down fast games as well – very useful.

The other key that has a different effect is the Shift key. Hold this down with Copy when editing a long Basic line and it will be copied very quickly. It works simply by issuing *FX12,1 when pressed, and a *FX12 when released. Press Shift+Delete for a fast line removal – because Control+U is slowed down if you have a habit of keeping your finger on the Control key.

The second utility is called *GSM* (Graphics Screen Manipulator) and allows the use of the RISC OS screen commands *SCREENLOAD and *SCREENSAVE to load and save graphics screens whether in shadow mode or not. The command should be followed by an appropriate filename. It also allows special loads such as EOR, OR, AND and a couple of others.

The type of load is selected by the *SCREENSET command. More information can be found on this command by typing *HELP SCREENSET. Information is given on all the *GSM* commands this way. Conversely, typing *HELP GSM displays the list.

*SCREENDIGI *digitises* the current graphics screen. What I mean by this it reduces the resolution of the current screen, giving it a *blocked* effect. To see this effect, try entering Mode 1 and typing *CAT followed by *SCREENDIGI 2. The effect is simple but impressive, and works just as well – if not better – with pictures.

*SCREENMELT employs the routine which many commercial games have used over the years. This particular melt is a square shaped melt to black routine and even works in teletext Mode 7.

● *The result of merging with a castle picture*

● *The test screen plotted using the castle as a mask*

● *A test screen before using the GSM*

● *The effect of digitising with GSM*

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LICENSED CREDIT BROKER

In business

Steve Turnbull examines the problem of the PC's death grip on the workplace

THE history of personal computers started probably around 1978 – as opposed to *home* computers which began two years later with the famous Sinclair ZX80 – when someone had the bright idea of giving individuals their own processing power unit built into something that would fit on a desk.

Now why would anybody want one of those? It's all IBM's fault really, as revealed in last year's BBC TV celebration of ten years of their Computer Literacy project. When IBM perceived that micros were the coming thing then, viewing it as a fad, they designed a poor quality alternative, the infamous IBM PC, and set their massive sales team to sell it to all the corporations that had their mainframes.

Nobody could oppose the IBM sales force, uninformed company buyers said *yes* in droves and the rest, as they say, is history – unfortunately for everyone forced to use PCs.

But what was it for? There's a very clear argument for mainframes in business, they can store vast quantities of information and process it very fast – try to comprehend the millions of gas and electricity bills issued every month, then visualise your little desktop computer doing the same thing; it's a pathetic image.

But why does a *businessman* need one on his desk? Well, at the time, there really wasn't a reason. It was brute force hard sell without any real purpose. Word processors didn't exist, neither did spreadsheets or databases, DTP hadn't even been thought of (the death of Fleet Street was still years away) – except on the mainframe.

There could only be one real reason – prestige. Because there was nothing that you could really *do* with them. In fact Apple, in their research, discovered that businessmen didn't actually want computers on their desks because they had – heaven forfend – *keyboards* and that meant *typing* which was identified with *secretaries*. We've come a long way from that, thank goodness.

Eventually databases were implemented, someone realised that letters could be composed on a computer and modified before being committed to paper (word processing) then a really bright spark dreamt up the spreadsheet – which is, arguably, the only original computer application. Then came DTP, and so on.

Each new application made the computer more useful, but one tended to get a polarisation of machines for application. People like to pigeon-hole things, if you can give it a label then you know how it should be treated.

PCs are *business* machines, that's a nice easy label, so we can put them in their box. Commodore Amigas are very good *graphics* machines, they go in that box over there, the old Atari ST is a *music* machine so we put it here and, as everybody knows, Apple Macs are for DTP put them in this box and Acorns are *education* computers, so they go over here.

Unfortunately, like most quickly applied labels, they're all wrong.

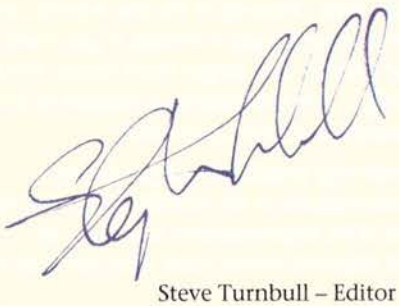
A computer may have certain facilities that make it particularly useful in a given area, the ST had built-in MIDI for music, the Mac was the first with a mouse and a window-style environment which made DTP easier and so on. Every Acorn machine has been easy to interface with add-ons, which has made it good in education.

So what is it that makes a PC perfect for business? Nothing. There's no special hardware requirement for business, you just need databases, spreadsheets, payroll programs and word processors. Every single machine mentioned here has fully capable software for the purpose.

And what makes the Acorn range perfect for education? Software. No machine has the sheer quantity of software that makes both the 8-bit BBC Micros and the 32-bit machines perfect for anyone wanting to do any kind of education. (The only computer that comes close is the 8-bit Apple II which you find in American schools).

The problem with computers and labels is that a computer can do any task – given the software and, if necessary, hardware – and you do it a disservice by saying *it's an education machine*, or any other label.

So if there's really nothing to choose between them, how do you make the choice? You can only choose on the basis of ease of use, and *that* knowledge is only available through personal experience.



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ICS WIZZO (it's magic)

051-625 1006

The ideA range

ICS was the first company to offer IDE products for Acorns back in 1990; now they are the standard choice for new Acorn computers. Building on three years' experience we have continually improved our IDE filing system. It now offers the highest level of RISC OS compliance, and compatibility with at least 45 different hard discs tested by us. Can any other supplier make this claim?

Our IDEFS abolishes the RISC OS limit of 512 Mb, and offers extra features such as password protection, background operation, disc partitioning, and power saving (which allows some discs to stop spinning when idle).

Partitions can have different levels of protection. Family or pupils can access some of your files while you keep others safely out of their reach. Or you can simply protect the whole disc (reformatting is not required for this).

Our hard disc upgrade kits are based around two internal interfaces at present: IDEA3IN for the A3000 Series, and IDEARCIN for the A300/A400/A500 Series. All kits are designed to a high standard and include all the parts you will need.

IDEA3IN upgrade kits include an I²C expansion socket as standard. They come with a 2½" disc already attached, and are easy to fit once you have opened up your computer. You may safely take no notice of rumours still being spread that internal upgrades might not be safe in an A3000. We have adhered carefully to the guidelines in Acorn's technical specifications, and in three years have never come across a problem.

IDEARCIN upgrade kits provide a fast 16-bit link all the way from the computer to the hard disc. They can even be fitted to an A310 without a backplane – quite a cost saving. A second hard disc can easily be added later if required.

Interfaces and hard discs can also be bought separately. By shopping around you may even save a few pounds. But beware: not all IDE hard discs work with all interfaces, and if you have a problem it may be difficult to decide who should put it right. We recommend buying a complete kit from one source.

WIZZO is the name given to our IDE filing system when it is supplied as a single rom chip. Wizzo5 is for the A5000, and Wizzo4 is for the A4. You should buy a Wizzo if you need password protection or wish to use larger hard discs. (Wizzo4 has been delayed slightly – we are adding a feature to ensure compatibility with possible future A4 upgrades).

A Wizzo rom by itself will only produce a slight speed improvement. If you need speed in an A5000, fit an IDEARCIN interface instead. Up to 60% improvement can then be achieved, but this does depend which hard disc you use so do check with us first.

How to read our ideA product references

A number at the end is the nominal hard disc capacity in megabytes. We usually round this down, so the actual formatted capacity may be higher. All discs have auto-parking. Average access times vary but all are below 20 ms.

All prices shown exclude VAT and are subject to change without notice. The cost to us for hard discs can vary enormously from week to week – not always downwards! Your local dealer can obtain *ideA* products from us or from a distributor.

Archimedes A300/A400/A500 Series Internal Upgrades

Package includes formatted hard disc, ideA interface card, hard disc cradle and fittings, fan kit, replacement multi-purpose LED (power and drive status), manual with fitting instructions. Can be fitted to an A310 without a backplane. If a backplane is used it must be a 4-layer type. Easily fitted by most users.

IDEARCIN 40*	£175	IDEARCIN 330	£399
IDEARCIN 80*	£205	IDEARCIN 420	£499
IDEARCIN 170	£275	IDEARCIN 540	£650
IDEARCIN 240	£325	IDEARCIN 1000	£925

A3000 Series Fully Internal Upgrades

Package includes formatted hard disc mounted on ideA interface card, manual with fitting instructions. Fully internal, using internal expansion slot. Co-exists with floppy drive and memory upgrades. Fits the new 1992 computers. Easily fitted subject to Acorn warranty stipulations.

IDEA3IN 40	£175
IDEA3IN 80	£250
IDEA3IN 120	£299
A3000 FAN KIT (not usually required*)	£19

**Only required if the computer has been fully upgraded, e.g. with maximum memory AND Econet AND an external podule.*

Separates for hard disc upgrades

We can only guarantee the performance of ideA interface cards with hard discs we have tested ourselves, so please check if in doubt. If you are buying a hard disc for an A5000 please say so. If you intend to fit the disc in addition to an existing one we need to know the make and model of the existing disc. Acorn's interface does not support all makes of disc, and some models will work as a second disc but not on their own.

Hard discs on their own are listed as, for example, IDEA 80. An S at the end indicates a 2½" disc.

IDEARCIN (Archimedes Interface for Internal disc(s))	£60
IDEA3IN (A3000 Interface for Internal disc)	£75
ARCHIMEDES INTERNAL CRADLE KIT	£15
ARCHIMEDES A300 / A400 SERIES FAN KIT	£15
4-SLOT 4-LAYER BACKPLANE	£52
POWER CABLE FOR SECOND HARD DISC	£5
A5000 SECOND HARD DISC FITTING KIT	£15

IDEA40*	£125	IDEA330	£349
IDEA80*	£155	IDEA420	£449
IDEA170	£225	IDEA540	£600
IDEA240	£275	IDEA1000	£875

IDEA40S	£115
IDEA80S	£190
IDEA120S	£239

WIZZO IDE Filing System on rom

Package includes rom, manual and fitting instructions. Compatible with RISC OS 3.0 and 3.1. Allows up to four logical partitions over two physical drives. Each partition appears separately on the icon bar and can have different password protection. Makes use of existing Acorn hardware for maximum compatibility, but works with a wider range of hard discs. Security breaches using ADFS can be prevented. Can be fitted easily by a competent user.

Available now: WIZZO5 for A5000	£39
Available soon: WIZZO4 for A4	POA

Quantity discounts available • Dealer enquiries welcome

** Lower-capacity 3½" discs are now very hard to obtain. Please check availability before ordering.*

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Peer pressure

ACORN are launching their peer-to-peer networking at BETT '94 which was demonstrated at Acorn World in October. This is an easy to use resource-sharing capability which forms part of Acorn's Universal Networking portfolio.

It provides an easy first step into networking and for some purposes is all the networking you'd need. Simply, it links neighbouring desktop computers together and enables all systems on the same network to share information and distributed resources.

Based on Ethernet technology, you'll need RISC OS 3.1 or later and at least 2Mb of ram. Meet these requirements and you can share hard disks and printers while keeping a consistent look and feel to applications.

Lock it or lose it

A NATIONAL survey of 10,000 companies has been launched by the DTI with the aim of identifying the extent of computer security breaches experienced by British businesses over the past two years and their effect on business.

The survey is sponsored by the DTO, NCC and ICL and plans to provide a measure of costs of IT security breaches, identification of major causes and evidence about the level of computer misuse. In addition the survey should highlight user awareness of security issues and some idea of the trends which have emerged since the last survey in 1991.

This survey found that more than half of the businesses had suffered from IT problems at an estimated total cost of £1.1 billion a year.

Twist again

VERTICAL Twist (0243 531194) have released Investigator III. This toolkit includes floppy disk backup, disk recovery and an undelete feature as well as hard-disk backup and virus detection. The price is £49.95, though you can upgrade from Investigator II for £32 inc VAT.

A new horizon

FIFTY Hampshire schools have been involved in the Horizon Project, the brainchild of Graham Bevis, Hampshire's County Inspector (now retired) and Martyn Wilson of the Hampshire Microtechnology Centre. Supported by Acorn Computers, teachers and students between 5 and 16 years were given multimedia authoring resources to explore, create and develop their own moving images and sounds.

The only restriction was that all material had to have educational value and clear links with the National Curriculum. The resulting 80 plus new resource modules for all areas proved the success of the project.

The ideas and concepts were diverse, from *Minstead* , a geographical and environmental studies multimedia database produced by Isambard Brunel Middle School, to Peel Common Junior School's *The Roman Soldier* , incorporating photographs taken using a Canon Ion Camera during a visit of the living history group, Legio Secunda Augusta.

As well as creating resources for themselves and others, the projects heightened motivation, inspired teamwork and improved information handling, organisational and presentation skills.

All the schools in the county were using Acorn machines so that ideas, help and suggestions could be shared. The Manager of the Project, Tony Cox commented, "The fact that a windowing operating system has always been standard on Archimedes computers and that file types are represented pictorially as icons, made the Archimedes accessible to everyone – the youngest users being just five years old".

Has it got wings?
Are the wings slim
Are the wings all covered in scales?
It's most likely a moth or butterfly.
Using the Dumpy Level

● *Some of the creations and innovations*

Title	*Producers*	*Level*	*Description*
Minibeasts	Isambard Brunel Middle School, Portsmouth	Levels 2 and 4	Entertaining introduction to the taxonomy of creepy crawlies
Minstead	Isambard Brunel Middle School, Portsmouth	Science Attainment level 3a/3f	Database of plant, insect and small animal life in the New Forest
Roman Soldier	Peel Common Junior School, Gosport	History KS2 Core Study Unit 1	Life of a roman soldier plus data on food, clothing and religion
Rivers and More	St Vincent Six Form College, Gosport	A level Geography	Introduction to a days study of the River Harbourne, Dartmoor

Further details on all the projects can be obtained from Tony Cox (0705 378266).

● *Mrs Jane Roberts, a teacher from Llanberis making the draw*

Topping Snowdon

WYDDFA Software (0286 870101) held a competition in October offering £50 of goodies for anyone who could give the English name for Wyddfa. The answer is Snowdon and the first correct answer was from Ysgol Gymraeg Ynyswen School in Mid-Glamorgan.

leading products from Digital Services

Squirrel – the relational database for RISC OS

We believe this to be the finest database available for the RISC OS platform, and a match for many more expensive products on the PC and MAC.
Squirrel offers unprecedented ease of use, yet has awesome power. Tables can be created in minutes by novice users, whilst those experienced in its use never cease to be amazed by its depth of functionality.

Squirrel Single User	*£ 139.00*
Squirrel Multi User	*£ 556.00*
Squirrel 'C' Developers Toolkit	*£ 99.00*

Armlock – hard disk security system

Armlock is a software only utility preventing unauthorised access to CMOS RAM or to designated files/directories on the hard disk of any RISC OS 3 computer. Unlike other security systems, Armlock does not require the hard disk to be partitioned into read-only and writeable areas.

ARMLOCK

Armlock Single User	*£ 35.00*
Armlock Ten User Licence	*£ 139.00*

Netgain – high speed application loader

Netgain is a real breakthrough in Econet technology which reduces the frustration of slow load times for applications.
With Netgain, applications installed on the network server are available to any Netgain configured client, who can load them at hard disk speed simply by clicking on the icon.
Compatible with Level 4 fileserver software.

Server Pack, including 10 user packs	*£ 200.00*
Additional 10 User Packs	*£ 100.00*

Waiter – The RISC OS menu system

Waiter is a complete menu-building system for risc os. Powerful, easy to use, hierarchical menus may be created, complete with icons and descriptions, enabling novice users to locate, run and move between programs. Passwords can be attached to applications or entire menus. The system is ideally suited for use with hard disks or networks.

Waiter Single User	*£ 35.00*
Waiter Site/Network Licence	*£ 139.00*

Netgain for Ethernet – high speed file transfer

Netgain for Ethernet provides the fastest transfer rates of any network currently available on the RISC OS platform. Typical transfer rate from a standard Ethernet system is approximately 200K/sec but Netgain achieves up to 900K/sec. In addition to this transport throughput increase, intelligent caching and a general reduction in bottlenecks result in staggering reductions in load times for typical applications.
No more then 64k of RAM is taken from any workstation.

Server Pack, including 10 user packs	*£ 200.00*
Additional 10 User Packs	*£ 100.00*

Ethernet Card – high speed networking

The Digital Services AUN compatible ethernet card has been designed to provide maximum possible bandwidth on thin ethernet systems. It also incorporates two unique features: the computer's CMOS RAM may be password protected, thus preventing unauthorised personnel from tampering with the configuration, and secondly the Netgain for Ethernet client software is included in the ROM.

Mini expansion card for A3000/3020/4000
£139.00

Digistore – tape streamer

Digistore is fast, flexible and TOTALLY reliable in operation. Friendly RISC OS software allows selective backup and restore. Backup commands may be included in your own programs.
Digistore can be connected to any RISC OS computer via a SCSI interface, and uses industry standard 1/4" tape cartridges.

250Mb £799.00 *525Mb £899.00* *1.64Gb £1249.00*

All prices shown are ex-VAT, which is chargeable at 17.5% on all items for UK residents. No VAT is due on foreign orders.
An extra charge will be made for postage and packing on all items ordered from Digital Services.

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Hampshire PO6 3BS Tel 0705 210600

Dropping SyQuests

THE SyQuest 105Mb from Norwich Computer Services (0603 766592) have dropped in price. The SCSI external drives now cost £510, with the internal option at £430, and includes one cartridge and cables but no SCSI interface.

The IDE version is now £395 including VAT. It also comes with a software patch to overcome an early problem with Acorn's ADFS.

Four play

THE majority of games players have been going Pro-Pad crazy as this device hit the Acorn market. However, an alternative is available from Magnetic Image (0603 402819), the Four Joystick Interface.

This device works will all machines via a dongle in the parallel port and costs £34.95. You can use your favourite joysticks or change them for different games whether you want to play with three friends or just one.

Resourceful IT

THE Calderdale Education Department IT Centre – ITAL (0422 357832) have launched a series of courseware packages aiming to meet school needs while making the most of the Acorn 32-bit machines.

The series comes under the title of Opening Doors of IT capability and builds on materials and resources which have developed within Calderdale schools and in-service sessions. Using texts, diagrams and images they address teachers problems and develop an individuals IT capability while delivering exciting subject-based learning programmes.

Each package comes with resources, notes and themed student activities related to the National Curriculum. The next three years will see a range of four or five packages, with two issues a year. Issue 1 is available now and consists of: Impressionism *KS2/3 Art*, Using Objects 1 *KS2/3 Technology*, Using Pictures 1 *KS2/3 History* and Limestone Scenery *KS3/4 Geography*.

Dictionary distribution

FABIS (0283 552761) are now distributing Lexique, Wortgut and Diction, previously distributed by New Era Software. The modern language dictionaries cost £20 each, with the English Diction costing £18.

Fabis have also launched a new font management system called Easy Font, retailing for £25. By simply clicking a button fonts become available to applications and can be removed just as easily. Easy Font comes with one of Fabis' font disks containing seven new font families. Font disks are also available separately for £5 each.

A game of two halves

AS England, Scotland, Wales and Northern Ireland aren't going to the World Cup in the States, you might as well turn on the computer screen and create your own super teams. Gamesware (0703 456523) are releasing the Archimedes version of Striker.

There are 64 international teams all with real players and you have 16 players and eight formations to choose from, from a sweeper system to all out attack. Furthermore, Striker contains a choice of six different strategies ranging from defensive to aggressive.

You can watch the entire third of the pitch so team mates can be spotted as they dive into the 18-yard box – or not as the case may be. The launch is set for March with a price of £25.99.

● *In the end it's the team that scores the most goals that wins*

Helping hand

CALIBRE UK (0274 394125) have been working closely with schools, college and universities to come up with a range of products to help rather than hinder.

For instance, the Calibre Distribution Amplifier which works in conjunction with the Calibre VGA Autoswitch. Used primarily in training applications this offers an ideal way to run one or two multiple extra monitors from a single VGA – or other analogue video – source.

● *Two outputs are better than one*

Fantasy collection

LYNSOFT (0287 624843) have added even more original clipart from famous fantasy illustrators to their collection. There are now three volumes of Kerry Earl's work with two from Russell Morgan and one from Roger Morgan.

Disks cost £7.99 each but a sample disk of 20 images costs only £4.99 and both options come with a £1 voucher towards your next purchase. There is even a demo disk option for £1.50.

● *Art Macabre on top*

BETT'94 — Preview

Technology in Education
BETT '94
NATIONAL HALL, OLYMPIA, LONDON
JANUARY 12-15 1994
10th Anniversary

CALLED the premier education showcase, BETT'94 is now in its tenth year. The emphasis is on ideas, information and advice, with a strong practical slant towards IT in the classroom. The show is open to teachers, IT coordinators, heads and department heads, where they can see the latest developments in IT and the role it can play in management as well as at the chalkface.

The show will be officially opened by Eric Forth, the Parliamentary Undersecretary of State at the DFE and it is hinted that he may take the opportunity to make a major announcement on issues surrounding educational IT.

The chairman of the SCAA, Sir Ron Dearing, will be holding a questions and answers session at noon on Wednesday 12 January to coincide with his final report on the National Curriculum. In addition, seminars will be running for all four days of the show catering for all levels of technical understanding and a variety of subject areas.

To celebrate the tenth anniversary of the show, there will be a special feature area, the *Decade of BETT*. This will chart the development of IT in schools over the last 10 years as well as putting forward views on what is to come.

Acorn has been at BETT for all of its 10 years and due to its position in education, the Acorn Village, consisting of Acorn's latest developments – such as PhotoCD and peer-to-peer networking – as well as those of developers, will be very much in evidence. For the first time, *Acorn Computing* will be exhibiting, so come and see us on Stand 366.

The Special Needs Village is run by NorthWest Semerc and sponsored this year by Acorn, as is the Education IT Year Lunch. In addition Acorn are launching a series of curriculum booklets containing case studies illustrating examples of IT in practice in secondary schools across the UK.

These will be available free to secondary schools from 12 January, just phone 0800 400 800 for your copies. They are designed to show how other schools can create their own systems based on the case studies, such as *Exploring mathematics with information technology* and *Langdale: Geography at KS3 and KS4*.

Impression Publisher will be given its first outing by **Computer Concepts (0442 63933)** as will the Pioneer quad-speed six-disk CD-rom drive. This looks like six separate CD drives as it can take six disks at once.

It is a SCSI-based PhotoCD compatible drive and its availability coincides with CDFS 2.2 from Acorn. On the music front Computer Concepts will have MaxMidi which is a basic Midi card costing £69.

Teachers involved in primary administration have had a long wait for an information management system running on a 32-bit Acorn. However, with Acorn, **Longman Logotron (0223 425558)** have launched SIMS which will be launched at BETT '94.

PIMS has been undergoing extensive trials where it has been used to cope with the complete administration needs of primary schools. A fully integrated system, it manages and links all information on teachers and pupils as well as budgets, accounts, maintenance, insurance and inventory needs.

Individual records are stored relationally so that information can be retrieved quickly and easily and incorporated into assessment sheets, class lists and registers.

Whereas PC-based SIMS was developed for secondary schools it is often used in primary schools as nothing else has been available, but PIMS has been developed specifically for primary school needs and takes advantage of RISC OS's multi-tasking environment. All SIMS data can be transferred directly into PIMS and information can still be saved in SIMS format should you need it.

Longman are also taking the opportunity to launch two easy to use and intuitive packages: Advantage, a new spreadsheet and First Page, a DTP package. There will also be a series of datafiles and support materials for Pinpoint linked with specific stages of the National Curriculum.

They have also been developing the Somerset Talking Computer Project Learning Materials. These are based on Talking PenDown and the aim is to help students make lasting improvements in reading, writing and short term memory.

Also on the education administration side is **Ernest Clarke Education Software (071-373 1955)**. They will be launching the Teacher's Personal Report Writer based on their existing teacher-centered system SPARRC (Software for Planning, Assessing, Recording and Reporting in the Classroom).

The Report Writer is designed with the individual teacher in mind and comes complete with statement banks, batch printing and an option list maker.

A new education series from **Sherston Software (0666 840433)** will be seen for the first time – Time Detectives, writ-

➤

● *NW Semerc's Special Needs A4000 with software*

IN POLE POSITION . . .

*Now available on RISC OS Format & Windows 3.1**

Risc OS, 2Mb Min. Required

CARS - MATHS IN MOTION

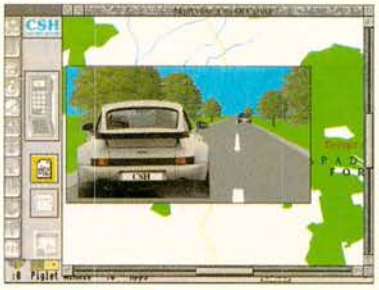
- ★ Modelling
- ★ Language
- ★ Science
- ★ Decision Making
- ★ Problem Solving
- ★ Teamwork
- ★ Strategy
- ★ Geography
- ★ Design
- ★ Technology
- ★ Life Skills
- ★ Transport
- ★ Maths
- ★ Art
- ★ DTP
- ★ Control

'CARS' is one of the most popular cross curricular simulations ever produced. It will provide you with an ideal base for an extended topic or an activity week; it's up to you how you use it! The new RISC OS and Windows 3.1* versions have several extra features including one that will allow you to design and race around your own Grand Prix circuit. The possibilities in this one feature alone are almost endless! The new program is accompanied by many resource files that include worksheets, crossword puzzles, word searches, anagrams, pictures, track plans, teacher support material and much, much more!

"Frontier 2000 is a superb pack, the trails are entertaining and informative whether used at home or at school"
– *Roger Frost, The Micro User, June 1992*

- ★ Hadrian's Wall
- ★ Roman Times
- ★ Mary Queen of Scots
- ★ The Solway Firth
- ★ Bonnie Prince Charlie
- ★ The Civil War
- ★ Victorian Britain
- ★ Railways
- ★ Timeline from 43 A.D. to May 1991
- ★ The Border Reivers
- ★ Map Reading
- ★ Decision Making
- ★ Genealogy
- ★ Poetry and Language
- ★ Music
- ★ Teacher Support Material
- ★ VHS Video Tape
- ★ Border Ballad Cassette
- ★ Full Colour Brochures
- ★ Posters and Postcards
- ★ Piece of Roman Timer
- ★ Tourist Information
- ★ Reivers Car Trail Guide
- ★ Magazines
- ★ Pictorial History Guide

Awarded 1993 Gulbenkien special commendation for most imaginative educational work



ALSO AVAILABLE
RISC OS
CD ROM

FRONTIER 2000

Probably the most complete education package to date ... £45.95 disk based version, CD Rom £79.95, Resource pack £30 exc. P&P & VAT

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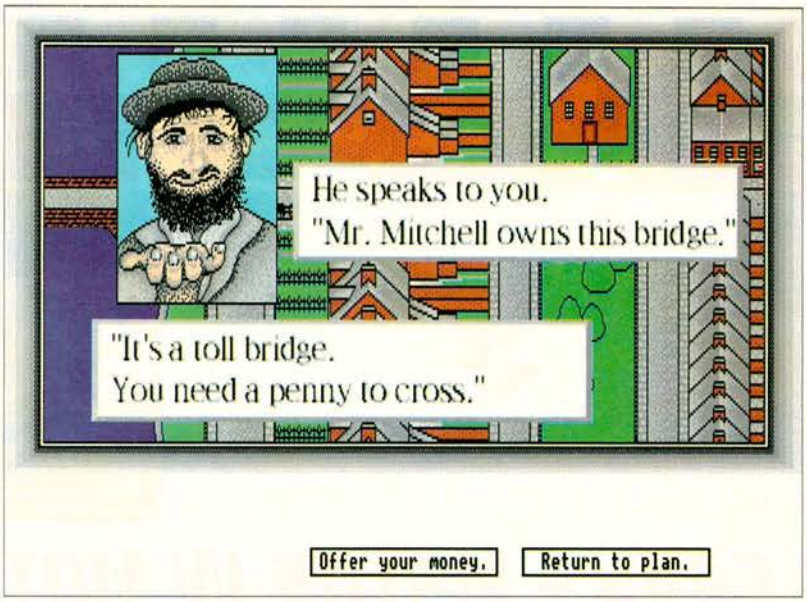


● *Return to Victorian values with a Sherston timeline*

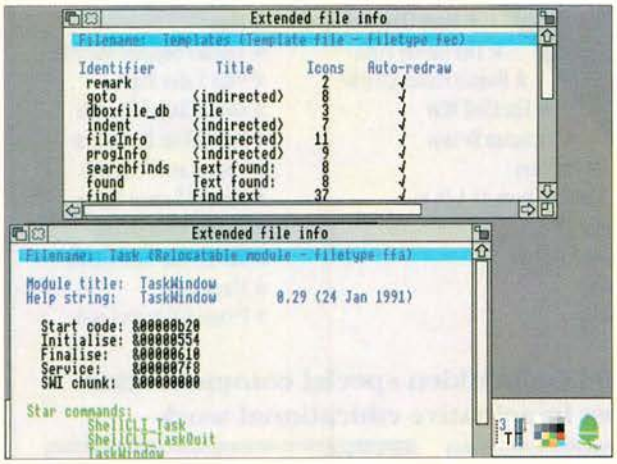
➤

ten by Simon Hosler. The first title is the Victorians and costs £39.95.

When a strange time warp moves various objects back and forward in time it is up to the children to use their skills of observation and deduction to find the misplaced items and return them to their proper time.

There is also a new adventure for juniors – Around the World in 80 Days. Not only do you have to travel but you must complete a range of challenges and puzzles within the time limit. A starting point for junior topic work with a geographical theme.

Commotion (0908 218880) are adding to their control products with three packages. First is a new serial control interface called The Command Centre with Commander software, which builds on the success of CoCo, adding a flow-diagram mode. You can work in the type of programming environment you feel comfortable with, flipping between transparent screens to reveal the solution in either language mode or flow-diagram formats.



● *DeskEdit 3 will be on show*

Additionally, it has full Boolean consistency, a learn command, and it accepts the use of variables as well as having an interrupt function. A starter pack is available for £269.95 and will be on sale in March.

Also available in March for £69.95 is Tracktronics Circuit Designer and Stopwatch costing £59.95. Stopwatch is a timing program which aids experiments in both Science and Technology and comes with hardware timing gates. Results can be sorted in a variety of ways and the information exported into a graphics package, spreadsheet and so on.

Still in control is **Lego Dacta (0978 290900)** with the Lego Dacta Control Lab. Called the complete solution to measurement and control at secondary level, it incorporates Logo-based software, models kit with sensor, full teacher and pupil support materials and new 8 input, 8 output interface with serial connection. Lego plan to take Logo into a new dimension with graphs, pictures, buttons and a simple word processor.

RISC Developments (0727 840303) will be on hand with software and hardware and in particular with DeskEdit 3, an all-purpose program and text editor designed with Basic and C programmers in mind. Features include a 2-entry desktop de-bugging window, independent scrolling window and 20 new invisible markers. The price is £31.95 (inc VAT) but you can upgrade from DeskEdit 1 and 2 for £9.95 and £5.88 respectively.

If your interests lie with multimedia but you haven't bought a CD-rom yet, **Cumana (0483 503121)** have their £249 double-speed PhotoCD compatible drive making its debut. In addition they are also giving away £300 of vouchers redeemable against CD-rom drives, software and related products.

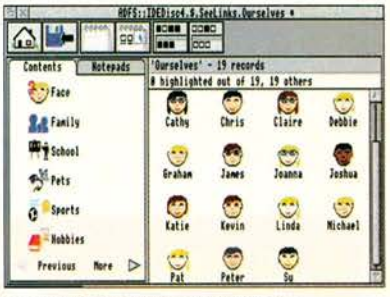
Staying with multimedia are **Irlam (0895 811401)** who will be showing the Acorn Replay DIY Plus and a Soundcard 16-bit Stereo Sampler.

Black Cat Educational Software (0874 622641) have a Clipboard for your 32-bit Acorn. A simple database, it is easy to set up and gives you the ability to change, delete and add fields at any time. There is also a useful function where fields can be restricted to minimise incorrect data entry. You can also add pictures to your records.

A suite of programs under the title of BearWorks will be on show on the **ERIC (0903 872400)** stand. This includes a wordprocessor (BearWords) which is available on three levels, the top level giving easy to use DTP, a database (BearBase) and finally a spreadsheet (BearSheet). Information is interchangeable with the package aimed at the 5-13 age range.

If you want to add a touch of style to your work **MEU Cymru (0443 841790)** have a range of Celtic clip art images and fonts.

ESM (0223 65445) are featuring the Seelinks series on their stand. There are two products at present, Ourselves and Transport, both of which are data handling programs for primary schools. They have also produced a CD-rom version of the popular Kingfisher children's encyclopedia – Micropedia. There are 1,300 entries with pictures and extensive cross references.



● *Data handling with Seelinks*

Another CD-rom to watch out for comes from the **Hampshire Microtechnology Centre (0705 378266)**. The Usbourne Exploring Nature CD-rom is an adaptation of the paper based Complete Book of Nature. It comes with realistic illustrations and sound as well as text written by teachers.

Diary Dates

BETT '94
Date: 12-15 January 1994
Venue: National Hall, Olympia
Contact: EMAP (071-404 4844)

Acorn User Spring Show '94
Date: 22-24 April 1994
Venue: Harrogate International Centre
Contact: Safesell Exhibitions (0737 814084)

showcase

software

Sleuth OPTICAL CHARACTER RECOGNITION

Sleuth is an Optical Character Recognition (OCR) package which converts human readable images of text into machine readable form.

Sleuth processes a scanned image of printed material and converts it into an ASCII file which may be further processed using a text editor or word processor. It is ideal for converting magazine articles, newspaper cuttings, legal documents, program listings, other resource materials etc. etc.

Sleuth version 1.0 is a low-cost entry package into OCR and produces excellent results on a range of typefaces. It is the first in a planned family of products which will take OCR on Acorn machines to full professional level. Any future OCR products will be available as upgrades to existing users.

- Fully RISC OS compliant and multitasking
- Sleuth recognises most PostScript fonts and other similar fonts (not bold or italic)
- With good quality 400 dpi images, Sleuth can achieve over 97% accuracy
- Converts text at speeds of 80-250 wpm
- User definable 'zone' used to choose which rectangle on the image to convert
- Handles sizes 9-24pt (you will need a 400 dpi scanner for good results below 12pt)

To use Sleuth you will require a scanner with a minimum resolution of 200 dpi. For best results you will need a 300 or 400 dpi scanner.

Sleuth £49

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Masterfile version 3 is the latest development in this best selling family of database programs.

Masterfile is fast, easy-to-use and provides powerful data management facilities suitable for home, education and business use.

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Masterfile £49

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Circle No 2. Reader Information Service

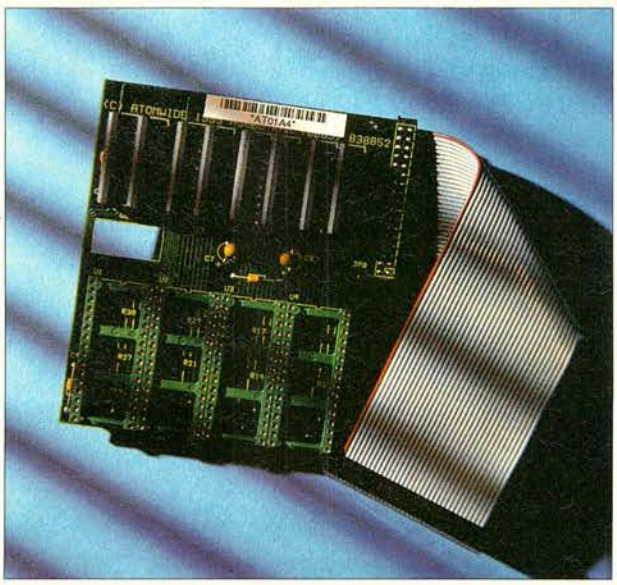
Slam in the

Rob Miller looks at the options when you want to upgrade the A5000 to 8Mb

PARKINSON'S Law states that *work expands to fill the time or space available*. This is never more apparent than when you're trying to load up that vital application into your computer.

You have a word processor installed plus, perhaps, a spell checker and thesaurus, and you just want to make a quick sketch in Draw to drop into the document. The error message *Application needs at least 96k to start up* appears so what do you do? The immediate solution is to lose one of the current applications but in the long run this is not ideal. The real answer is to install more memory in your computer.

There are three main parts to a computer's internal architecture. These are the CPU or central processing unit – such as ARM3 – the memory which is often referred to as ram or random access memory and the support chips such as the MEMC (memory controller), IOC (input/output controller) and VIDC (video controller).



The memory is used to store all information in the computer such as programs and data. Even the picture you see produced on the monitor screen is held as data in a special area of the memory.

Although the CPU and support chips can be upgraded – ARM2 to ARM3 – the memory is the only part of the computer that can be expanded or increased. Memory upgrades usually take the form of a small circuit board that must be plugged into the computer's main board.

Every machine in the Acorn range of 32-bit computers can be upgraded to at least 4Mb of ram and a number of machines can be expanded to 8Mb including the A5000. The now discontinued A540 could be upgraded to a massive 16Mb of ram.

Some time in the future machines from Acorn are likely to go way over this limit and it is not unlikely that we'll see computers with memories exceeding 128Mb ram one day.

In the beginning

Back in the mists of time, when the BBC Micro was king of the castle, a computer with 32k was considered quite a flamboyant contraption. The memory was perfectly adequate to run all manner of programs such as wordprocessors and spreadsheets. Even mega-games such as Elite managed to squeeze themselves into the available space.

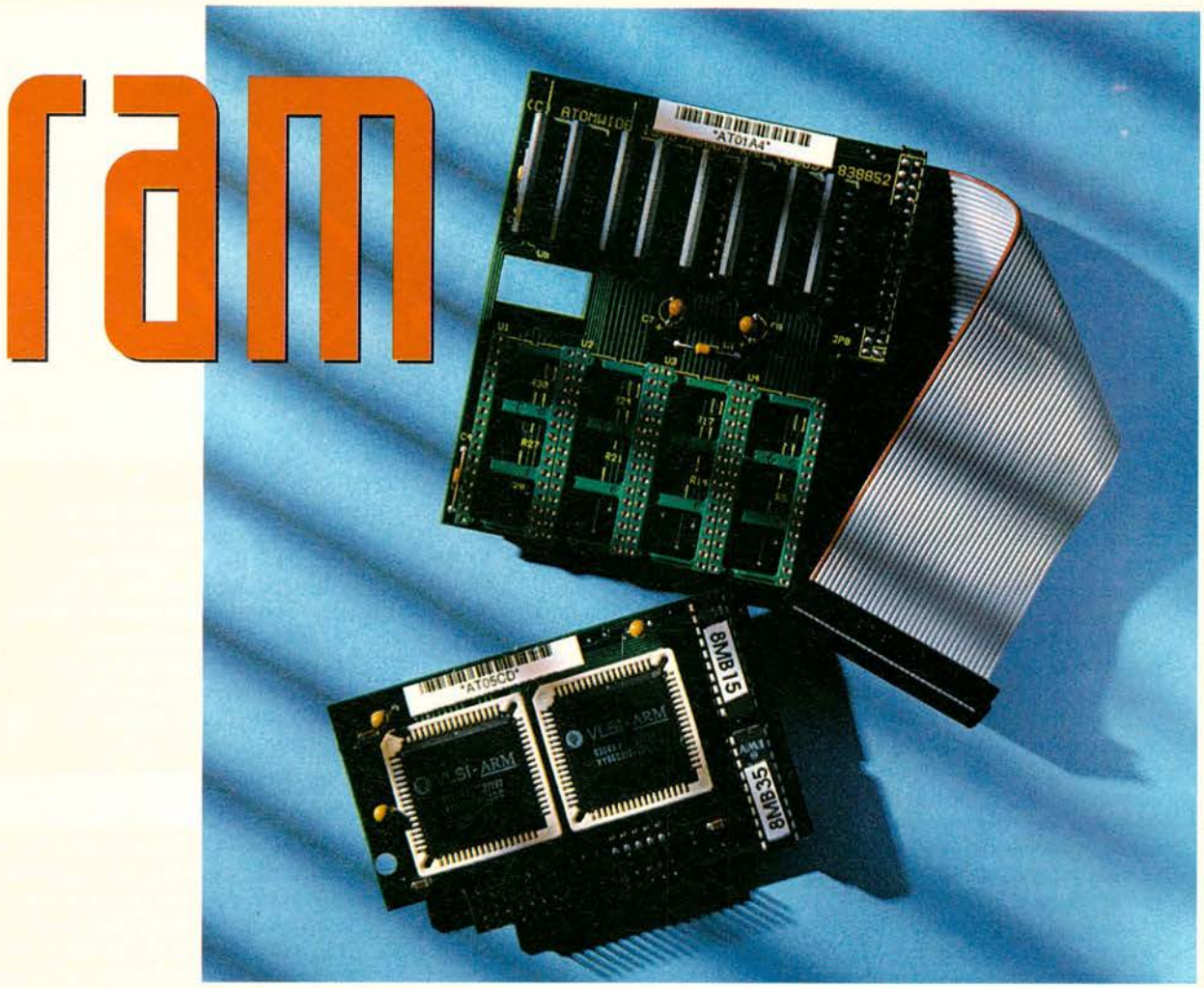
Nowadays, with the advent of progressively more complex software, memory – or more importantly, the lack of it – is quite a problem. If you were to ask a selection of Archimedes owners what their first purchase for his/her machine was/will be, I'd put good money on the majority choosing a memory upgrade of some kind.

With the current advancements in hardware upgrades, the 4Mb ram limit is notably restrictive. Apart from not being able to load all the applications you want to, some of those applications can, and will, require a lot of memory to function with any degree of usability.

One good example is Kodak's PhotoCD, destined to hit the streets sometime soon. The software itself is quite compact and will even fit on the humble A3010. If, however, you actually want to load a picture from a PhotoCD at a resolution other than minimal, you're going to need a minimum of 4Mb of ram.

Another advancement on the 32-bit machines is sound quality. Computers have progressed considerably since the time when a sound effect meant playing a quick burst of white noise.

These days 16-bit stereo sound is commonplace and with the imminent release of a number of sound cards and samplers for the



Acorn 32-bit range, large amounts of memory will be vital to handle the complex samples.

What is there?

Although a collection of different memory upgrades is available for Acorn RISC computers, this review is aimed at 8Mb cards, and in particular, those for the A5000.

Due to the way that 8Mb upgrades work, a second MEMC chip is required. This means that any MEMC chip on the main board has to be re-located onto the upgrade concerned. In older A5000s, this required major work as the MEMC chip was soldered directly onto the main circuit board.

However, recently Acorn announced a 33MHz ARM3-powered A5000 which, not surprisingly, runs at a greater speed than earlier 25MHz ARM3 models. Another feature of this new machine is that the memory controller is located on the main circuit board in a socket, allowing the easier installation of 8Mb ram upgrades.

The two upgrades featured here are both designed to work in either old (25MHz ARM3) or new (33MHz ARM3) A5000s. For the purpose of this review, both upgrades were tested in an A5000 already fitted with a socketed MEMC chip.

Atomwide 8Mb ram for A5000

The Atomwide solution is a two-card design. One fits into the sockets occupied by the RISC OS chips – the operating system chips are then relocated on this board. The second board, containing a pair of

➤

Product: Atomwide 8Mb ram for A5000
Supplier: Atomwide, 7 The Metro Centre, Bridge Road, Orpington, Kent BR5 2BE.
Tel: 0689 838852

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4 to 8Mb £339.00 (£433.58 inc VAT and fitting p&p free)
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4 to 8Mb £339.00 (£398.33 inc VAT p&p free)
2 to 8Mb £389.00 (£457.08 inc VAT p&p free)

Product: RISC Developments 8Mb ram upgrade for A5000
Supplier: RISC Developments, 117 Hatfield Road, St Albans, Herts AL1 4JS.
Tel: 0727 840303

25MHz ARM3 A5000 memory upgrades
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matched MEMC chips, plugs into the MEMC chip socket and is connected to the rom board via a short ribbon cable.

The 8Mb upgrade requires the host A5000 to already have 4Mb of memory present either as an upgrade or fitted as standard in some machines. If you do not already have this, Atomwide can supply their own 2 to 4Mb upgrade for an additional £50.

The full set of fitting instructions supplied shows clearly, step-by-step, how to fit the upgrade. Each stage, from dismantling the A5000 to fitting the upgrade and reassembling, is illustrated by a helpful diagram, making confusion as to orientation of components and so on virtually impossible.

Fitting the upgrade was a simple procedure that anyone competent with a screwdriver could perform. The only tricky part was removing the existing MEMC chip from its socket, although Atomwide can supply an special 64-way extractor tool for the job. A small deposit is required for this service, refundable on return of the extractor tool.

Once you've got everything back together, testing the upgrade is a simple matter of turning the machine on and checking the free memory. The task manager on the desktop should show the total memory to be 8192k (8Mb).

Older 8Mb ram upgrades – for A400 series – were supplied with software patches to allow the extra memory to be used. This is no longer necessary as RISC OS 3 contains the relevant code to perform this task.

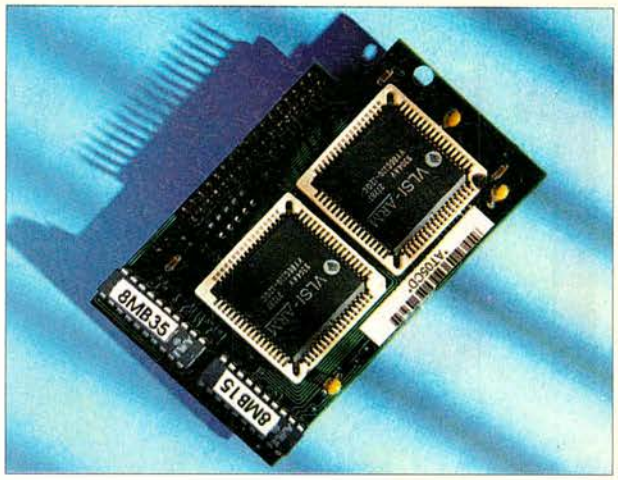
Techie bits

The MEMC chip inside the Archimedes and other Acorn RISC computers is designed to control 4Mb of memory. It works alongside the ARM processor and enables it to access and *talk to* the memory. If you want to increase this amount, a second MEMC chip is required to handle the additional ram.

Because of the way that the ARM chip works, it is essential that both MEMC chips are matched – run at the same speed – to ensure that the additional memory fits in. As well as the having identical speeds, paired MEMCs must be able to function over the same temperature range.

If you imagine a three-legged race team consisting of one thin and fast person with one fat and slow person, the chance of them winning a race is likely to be very slim indeed.

Similarly, if you mismatch two MEMC chips, the result is likely to be that the ARM will refuse to acknowledge the extra 4Mb of memory. Two people of similar build will have no problem winning any race. Matching MEMC chips on an 8Mb upgrade will also guarantee smooth running.



RISC Developments 8Mb ram upgrade for A5000

RISC Developments' 8Mb upgrade is also a two-card design, but uses a different approach. One card is plugged into the MEMC socket and the second card slots into the memory expansion socket. The MEMC chip from the A5000 circuit board is then relocated on to the MEMC card. The MEMC board supplied with the review upgrade already had two MEMC chips fitted.

If you already have a 2Mb upgrade card in your machine it must be removed. A £60 trade in is given for owners of Acorn or RISC Developments 2Mb ram cards when purchasing either of the 2 to 8Mb upgrades.

A brief set of fitting instructions is included with the upgrade, obviously aimed at someone with a certain degree of technical experience and knowledge. An example, is a reference to the Acorn Service guide for dismantling your machine. Quite easy if you know how, but rather involved unless you have clear instructions in front of you.

The two cards are designed to link directly together with a tiny plug locating directly into a socket from one board to the other. The MEMC board is particularly thin, allowing it to flex in a rather unnerving manner and join to the memory card. After a little humming and ha-ing I managed to fit the upgrade and get my A5000 back together.

Testing the upgrade is an identical procedure to that for the Atomwide version. Just switch on the computer and check the memory free. A slight delay is noticeable when resetting the A5000 as an additional check is performed to test the extra memory. This also happens with the Atomwide upgrade.

Summing up

Unsurprisingly, there's not a lot of choice between the two upgrades. They both perform the task they're intended for perfectly well. Both are reasonably easy to fit, although RISC Developments' instructions fell a little short when it came to clarity. It was fortunate that I had the Atomwide instructions to hand.

Both upgrades performed well and stood up to extensive soak-testing which involved leaving my A5000 on for several days at a time.

The ribbon cable on the Atomwide upgrade might cause some of those who are more electrically-minded to shout What about noise? but this possibility is removed by interleaving earth with every data line on the cable.

The only reservation I have is with RISC Developments only supplying one MEMC chip with their upgrade. Atomwide supply a MEMC card already fitted with a pair of matched MEMC chips and it is therefore guaranteed to function correctly.

Prices on both upgrades are very close, with Atomwide's working out cheaper by £10. The Atomwide upgrade has four points in its favour, namely simple fitting instructions, the paired MEMC card, no need to exchange an existing 2 to 4Mb memory card, and most importantly, the price.

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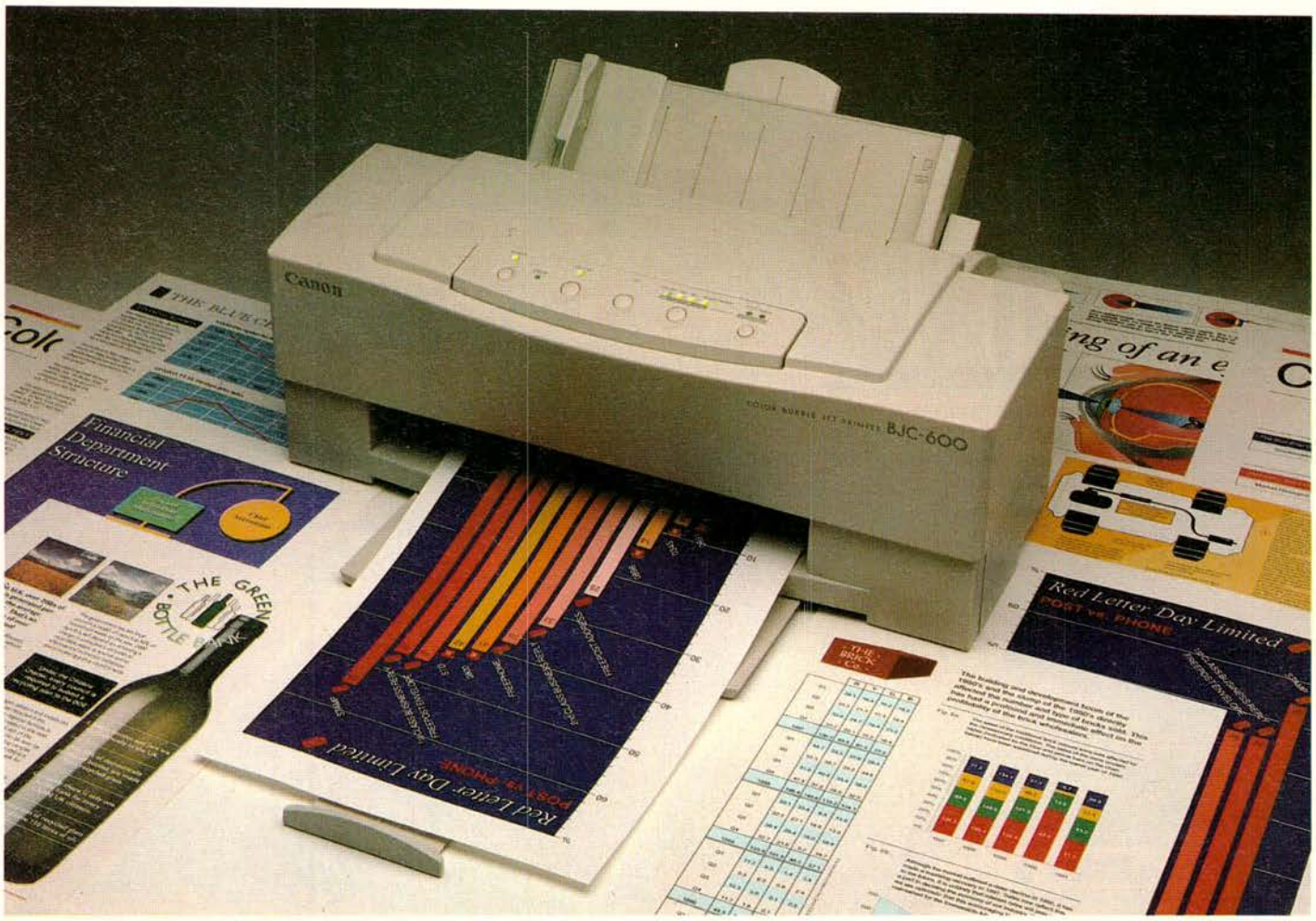

The BJC-600 and RISC OS 3 Turbo DRIVERS

The brand new BJC-600 A4 plain paper printer from Canon, combined with Computer Concepts' 24-bit TurboDriver software, provides a key component in the full colour revolution that is occurring in the Acorn world.

RRP: £529.00 + £10.00 carriage + VAT (£633.32)
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Requires RISC OS 3.1

Some of its key features:

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E&OE Prices & descriptions are subject to change.

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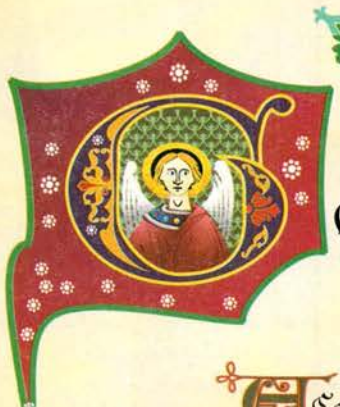

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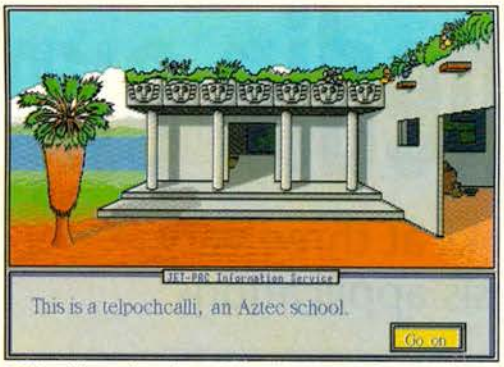

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Exploring the lands of the Aztecs

Stepping out from Bermuda via the old Americas is Frank Jukes

I'VE just learned how to count – Aztec style. Aztecs is Sherston's latest offering and the first adventure to be written by Adam and Sandra Hosler – whose brother is the well-known educational software writer, Simon Hosler.

The program provides a subtle approach to learning opportunities, with Sherston's usual stunning graphics, and helps them to maintain their reputation for producing the very best in educational software as well as making Aztecs an undoubted winner.

If, like me, you know little about the Aztecs don't panic, the package comes complete with a whole range of resource materials for both teachers and pupils. Useful help and support for teachers is provided in the manual and the children are treated to posters and help cards which are bright, interesting and very well produced.

The story revolves around the attempt by two children to prove the innocence of a nobleman who has been wrongly accused of the theft of Emperor Montezuma's precious mask. On holiday in Bermuda, the children set off for Miami in their uncle's helicopter and find themselves travelling through the Bermuda Triangle.

Like countless travellers before them in this area they encounter problems and are thrown off course. When they check the helicopter's flight computer they find that they have been transported through time and space. They are back in 1519 and over Mexico City which, they discover, is called Tenochtitlan and is the capital of the Aztec empire. From then on, things happen ...

Each location in the adventure offers opportunities to search for and gather information. Using the uncle's ever-present computerised jetpack as a source, clicking on various areas within the scene elicits something of their history or purpose.

This might not sound too interesting, but the combination of carefully crafted illustrations, well chosen sound effects and succinctly posed instructions and questions makes exploration quite compelling.

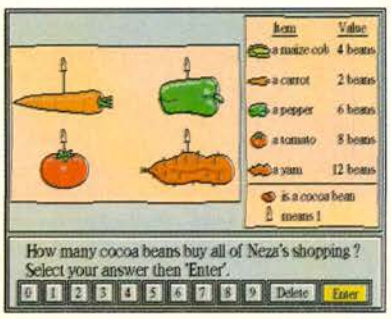
The range of information provided in the adventure is extensive and very impressive. It includes material on areas as varied as homes, farming, trading, schools and temples as well as the events which led up to the destruction of the civilisation.

Once acquired, the knowledge is applied to the solution of puzzles or problems which feature aspects of Aztec culture such as calendar, their picture writing and counting symbols.

The level of difficulty of these puzzles can be set by the teacher. At the hardest level pupils must negotiate all of the tasks. For younger children the challenges are easier but, again, all of them must be worked through. At the simplest of the three levels there are no puzzles and the adventure becomes a story simply to be read.

It is also possible to vary the language used in the program. If it is set to the harder of the two levels, which it is by default, things are not too difficult and the pupils are exposed to all of the information contained within the adventure. Unsurprisingly, the easier level is most suitable for younger children, but it does mean that some of the information is not used.

Several other useful options are also available to the teacher, including one to change the starting position and another to save a current position. With 26 different starting places available the frustration of having to repeat early parts of the adventure to attempt to solve a tricky part again is thankfully removed.



● *There is more to be found by going to the market than shopping*

PRODUCT SPOTLIGHT

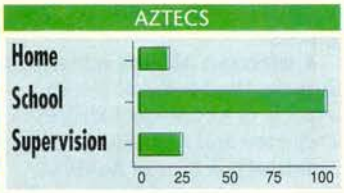
Product: Aztecs
Price: £39.95
Supplier: Sherston Software, Swan Barton, Sherston, Malmesbury, Wiltshire SN16 0LH.
Tel: 0666 840433

Summing up

Aztecs is a very versatile package. It can be used as an adventure in its own right or – and I think this would be my choice – as a resource on which to base a class topic. Either way it makes learning about this ancient civilisation entertaining and easy.

SUITABILITY

AZTECS



NATIONAL CURRICULUM

Key Stage 1 and 2. English ATs 2 and 3. Maths ATs 1, 2, 3, 4 and 5. Geography ATs 1, 2, 4 and 5. Technology At 3.

Ages 5-11

Multimedia experience

Frank Jukes looks at three very different Genesis applications

PRIMARY Nature, Cistercian Abbeys and Letters are three examples from Oak Solutions' current multimedia output. All are based on Oak's highly successful Genesis and all are well worth careful consideration.

First is **Primary Nature** which comes on four disks – a start-up disk and one each for Pond Life, Hedgerows, and Food Chain. A set of 32 copiable worksheets is also included.

Each of the separate applications within Primary Nature contains a number of pages with pictures of a variety of animals and plants, information about them and a choice of routes between them.

With this approach it is possible to browse or follow a train of thought as it develops from page to page or alternatively to search for a particular piece of information. All of the pictures are large and of good quality with just enough detail to keep them uncluttered but still informative.

The first page is double normal size and movement around it is by dragging the horizontal scroll bar. Looking around provides no clues to what may be beyond but clicking anywhere on the page leads to a linked sub-page being opened.

Clicking on a stretch of open water will open a page on water lilies with references to frogs, water stick insects and phytoplankton.

Following the phytoplankton route needs only a click on the word to open a new page with a picture of one of these tiny plants along with three brief paragraphs about it. Just in case you get lost, a button is provided on each page to return directly to the title page.

Food Chains is a little different. Based on life in an oak wood, its primary purpose is to make it possible to follow some of the food chains present in that kind of an environment. With over 30 inhabitants of the wood to choose from and with careful recording of what feeds on what, it is easy to quickly build up a picture of how interdependent all of them are.

Clicking on *thistle* produces a page which shows the thistle to be consumed by wood mice, goldfinches caterpillars and, indirectly, by blue tits. Following the wood mouse route reveals that it is preyed upon by hawks, owls, weasels and foxes. The cold hard truths of Mother Nature are revealed.

Three further sections of Food Chains include a database, a section on sorting and a picture gallery. The database contains a useful assortment of information on relevant wildlife such as habitat, size and food while the section on sorting provides an opportunity to place the different creatures on to a grid depending on what kind of a creature it is and what it is covered with.

The final option, to create a wildlife picture, allows the various creatures to be dragged on to a window to build up a picture which can be printed.

Hedgerows is based on a real hedge which was planted at Skelton Grange Field Centre in Leeds to attract, among other things, butterflies and insects. It is possible to learn much about the life to be found within a hedgerow. Clicking on one of the plants reveals information about the plant and any creatures likely to be found in it or on it.

Careful exploration such as this will start to reveal how complicated a habitat this really is with food, homes and shelter being provided for many kinds of animals and plants.

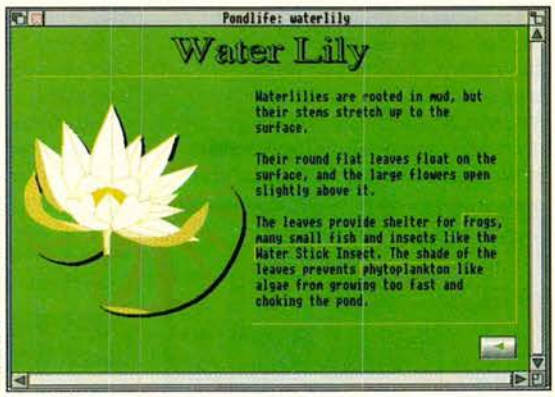
Cistercian Abbeys is intended to support the Medieval Realms aspects of Key Stage 3 History. Designed and created by Tony Holdstock, a former Advisory Teacher at Leeds City Council's Education Information Technology Centre, it provides a wealth of information on mediaeval monasteries and the monks who

Hedgerow: Menu
Hedgerows
Hedges are planted for many reasons. This one is designed to attract butterflies, insects and other wildlife. It is based on a real hedge at the Skelton Grange Field Centre in Leeds.
Explore the hedge by clicking on any of the plants above or on the green words and arrow below. Words in red take you to more information. Red arrows will bring you back to this page.
Quit
Wildlife
Food webs
Energy
Activities

● *The hedgerow is a real one*

PRODUCT SPOTLIGHT

Product: Primary Nature, Cistercian Abbeys and Letters
Price: £45 each
Supplier: Oak Solutions, Broadway House, 149-151, St Neots Road, Hardwick, Cambridge CB3 7QJ.
Tel: 0954 211760


Pondlife: waterlily
Water Lily
Waterlilies are rooted in mud, but their stems stretch up to the surface.
Their round flat leaves float on the surface, and the large flowers open slightly above it.
The leaves provide shelter for frogs, many small fish and insects like the Water Stick Insect. The shade of the leaves prevents phytoplankton like algae from growing too fast and choking the pond.

● *From information on one aspect of pondlife you can learn about others*

Abbey: Mill
The Water Mill
Cistercian abbeys were always built near running water. This not on
provided clean drinking water and kept the drains and reredorters
flushed, but also became a source of power.
Watermills were used at s
abbeys to grind corn to m
bread. They were also use
help in iron working.
The waterwheel could be used to drive bellows to heat the furnace, to work a trip hanmer for shaping the hot iron and to drive grindstones for sharpening finished tools.

● *There was more to Cistercian abbeys than religion*

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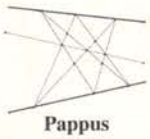

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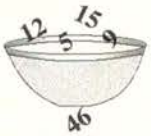

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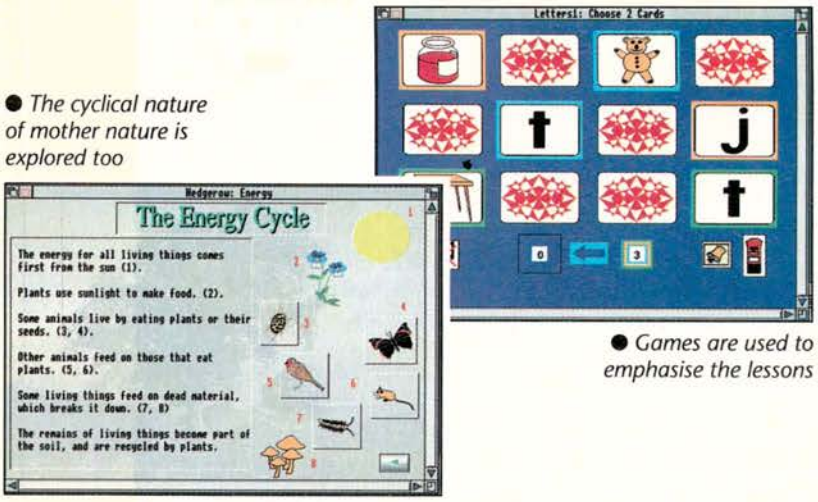

Letters1: Choose 2 Cards
t
j
t
Hedgerow: Energy
The Energy Cycle
The energy for all living things comes first from the sun (1).
Plants use sunlight to make food. (2).
Some animals live by eating plants or their seeds. (3, 4).
Other animals feed on those that eat plants. (5, 6).
Some living things feed on dead material, which breaks it down. (7, 8)
The remains of living things become part of the soil, and are recycled by plants.

● *The cyclical nature of mother nature is explored too*

● *Games are used to emphasise the lessons*

lived in them.

Basic choices are made from the main page. From a variety of headings it is possible to find out about abbey buildings – the building in the application is based on Kirkstall Abbey in Leeds – the rules of the Cistercian Order, Saint Benedict, how abbeys were organised as well as religious orders.

There is even a database containing details of over 200 British abbeys. The feeling throughout is one of quality and authority and it is obvious that a great deal of care has been taken to ensure that the illustrations are clear and the language accessible.

Similar care has been taken with the set of photocopiable worksheets included in the package. Once again, they are of high quality and provide a significant body of extension work.

A typical section of Cistercian Abbeys is the precinct plan. By clicking on first a map and then a simplified three dimensional line drawing it is possible to move around and explore the various features and areas of the abbey. As each area is visited the relevant part of the drawing is emphasised or a separate illustration provided.

To ensure that interest doesn't wane the illustrations are varied in style with some of them animated and some of them having sound samples associated with them – does a dove really sound like that?

Sound also features in a different context. As if to emphasise the impression of quality there is provision within the application to play CDs of typical music. For those with a CD-rom drive the manual provides instructions and suggests a suitable recording. For the rest of us a few short extracts have been built in.

Cistercian Abbeys is very impressive and, as someone who would never profess to know more than a little about things historical, I must admit to becoming increasingly interested in this part of our past.

Letters is aimed not at Key Stage 3 but at Key Stage 1. Used to introduce the alphabet to young primary children or older children with special needs, it uses animated films, graphics and sound to show how the letters are formed and to introduce their initial sounds.

Each letter has its own animation, demonstration of its formation and game of I-Spy. Each of these is suitably bright and cheerful and holds the attention very well. The animation is uncomplicated and shows the letter morphing between an object with the relevant initial sound and the letter itself.

The demonstration of the letter's formation is similarly simple and is achieved by a moving blue line. The point at which it is started is emphasised and there is a little rhyme alongside to help memorise the process. By clicking on the accompanying icon the rhyme is spoken in a clear voice.

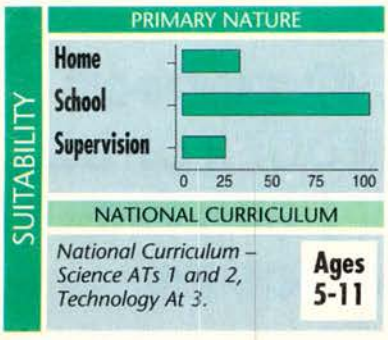
Demonstrating how a letter should be formed would appear to be a straightforward task. Unfortunately it is far from that. The lack of uniformity from school to school and from area to area makes for a major problem.

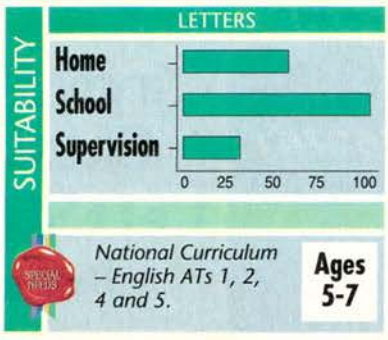
Some schools teach *t* with a tail, others teach it without. In some schools *y* is curved, in others it is angular. Letters demonstrates letters which are generally angular and without tails. That makes it likely to be unsuitable for use in a good number of our schools.

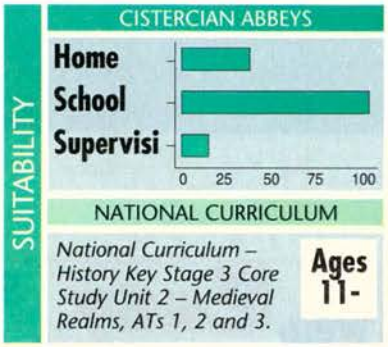
The solution may be for Oak Solutions to produce two separate versions or provide two sets within the one version. Alternatively they could move to the character set used by the BBC in its television programme *Words and Pictures* which seems to have traced a reasonably successful path. For the present, check first.

It is also possible to hear the sound of each letter. Unfortunately, the voice in this instance is not so clear and some of the letters sound a little indistinct. This shouldn't be too surprising considering the difficulty of clear enunciation of letter sounds when attempting them live. A little tidying up or even re-recording of the offending samples might help.

What is available is a useful resource and my criticisms should be kept in proportion. If the letter shapes match your taught style, fine. If they don't, then still take a good look at Letters – only a few of the letter shapes are problematic and there is still a great deal to be got from the package.







Summing up

These offerings from Oak are tightly focussed and of a high quality. All of them provide worthwhile experiences at the computer and extension work of the same standard away from it.

With the growing interest in multimedia approaches to learning Primary Nature, Cistercian Abbeys and Letters all offer what could be a rewarding and uncomplicated first experience.

illustration from
Explore with Flossy the Frog

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NEONLIGHTS

Ringing in the new

Teri Paul looks at a new set of PD to make life that little bit easier

I AM going to dispense with the idea of New Year resolutions here and now. Most of us would like to be more *something* so there are some ideas which may help – but there is no compultion. After all, resolutions are between you and your conscience. Now doesn't that make you feel better?

For anyone involved in education January means the BETT show. This is held in London for teachers and advisers for them to see what the software and hardware manufactures have in store for them. You get to see some of the CAD/CAM machines on display plus unusual and interesting ways of fund raising. But this all costs money.

Enter Dave Walsh, who has taken the teacher's – and parent's – cause to the PD. As well as giving training he has produced a series of freely copiable resources for Acorn machines in DataSweet, Eureka, Geography, Junior Pinpoint and My World formats among others. You can get these via Datastream or APDL or directly from Dave Walsh, 37 Gainsborough Drive, Beltinge, Herne Bay, Kent CT6 6QJ.

If you have done yourself proud with satellite, TV and the video recorder and now can't find anything, take a look at a selection of programs from Stuart Ford. !Videos is a very nice database which records the title, subject, features, format, data and any notes you want to make.

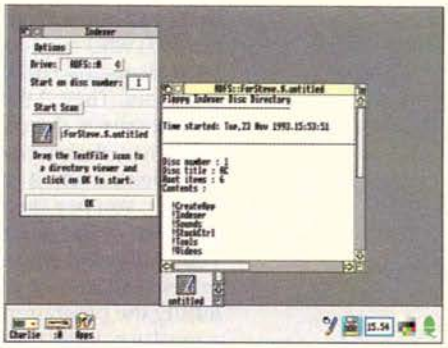
You can cycle through entries, search on the title, subject, features and date fields and save in its own format or as a textfile for further work. If music is more your forte then !Sounds does the same for your music collection. Both programs are supported by Interactive Help.

However, you may have spent the time downloading software on to a mound of floppies. One way to index them is by Floppy Indexer – but you'll need RISC OS 3.

It's simple to use, just choose which drive you want the program to scan and enter the number to start or continue numbering the disks from.

Drag the textfile icon to a Filer window, but not the directory viewer of a floppy disk, unless it is in a different drive to the one you're scanning – if you drag it to the same drive you will get a lot of disk swapping. If you don't have a hard disk use a ram disk as it will speed up the proceedings significantly.

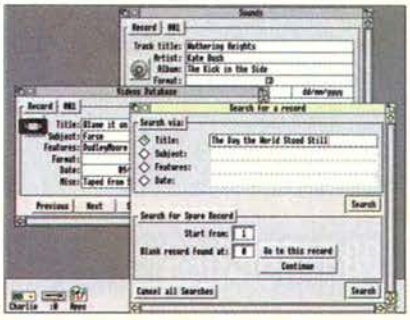
You'll be prompted for the next disk and be told what this will be numbered. You can stop or skip to the next disk number at any time. A new feature of this version is due to RISC OS 3 automatically sensing PC disks so Indexer can scan them. The finished files are textfiles which can be loaded into other programs or printed at will.



● *Get organised and index your disks*

Saving memory and sanity

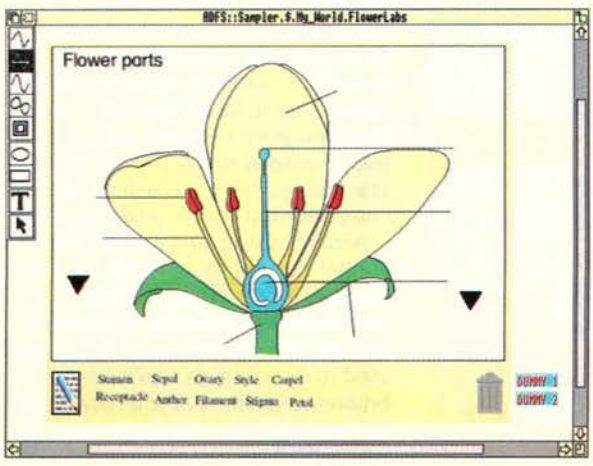
Anyone who has worked on a 1 or 2Mb machine will know the frustration of running out of memory. That doesn't mean that a 4, 8 or 16Mb machine is free of the problem, but you try running Paint, Draw and Impression and not dispense with your favourite screen mode or Pinboard set-up.



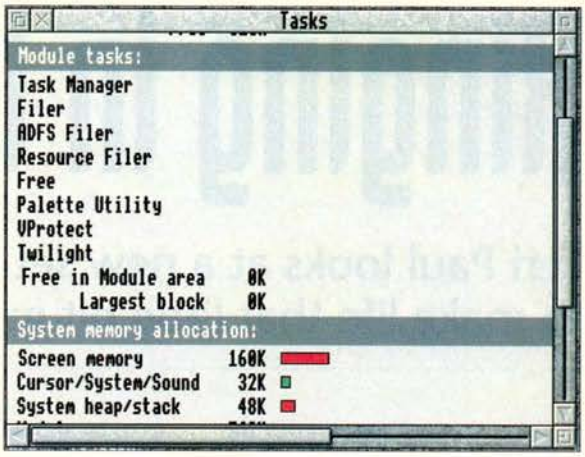
● *Whether it's sound or action, !Sounds and !Video are useful utilities*

Mark Smith – he of ArcFS fame – has been working on a problem to allieviate, if not actually cure, the problem. RMA Manager releases completely unused pages of memory trapped in the module area and in some cases can greatly reduce the amount of memory caught up by RMA fragmentation.

It can be a little temperamental with SparkFS and Zap from time to time, and when initialising, RMA Manager will not release free RMA memory created before it's loaded. So make sure that you put the RMA Manager early on in the boot sequence – after any virus-killer



● *Use Dave Walsh's PD resources to add extra screens to MyWorld*



● *Once RMA Manager is loaded you'll find 0k in your module area*

modules, of course. There are some minor problems but I have found the program a sanity saver.

Bits, bytes and licences

A new initiative has been announced by The Chroma Project (0328 862693) who want to regularise the term *Licenseware* on the Acorn machines. Their definition of Licenseware is shareware with a difference. Rather than trying a piece of shareware and if you like it register, you pay the software library up front for the program. This allows you to take full advantage of the low prices of shareware programs while letting the programmer benefit from a royalty paid by the library proportional to sales.

The idea – widespread on the Amiga – is that the shareware programmers don't get discouraged by users *forgetting* to register and so continue to produce good low-cost, high value programs so everyone wins.

Sounds cute? Well maybe, but frankly it seems to be just commercial programming without the frills. To my mind there are only three types of non-commercial software: Public Domain, which you don't pay for, Shareware which you pay for if you like it after testing it and, just sliding in under the bar, Careware where you pay money to a designated charity when you've got the program for free.

● *RiskyGame III – especially the way this pilot is going*

Name the day

Diary manufactures love this time of year and on both the commercial and shareware fronts software companies are getting in on the act too. For instance, South African-based Moonlight Graphics have produced a shareware version of Desktop Companion – a full commercial package costing £37.50.

This gives you all the useful bits as well as the curiosities you'd expect of a diary – perpetual calendar, telephone book, jotter, calculator, timer, international time zone displays, executive decision maker, useful reference system with scientific formulae, anniversary names and household hints and tips. I found it worked best with at least 2Mb, and preferably a 4Mb machine.

If you left 1993 with as little to do with the EC as at the end of 1992, you could remedy this by learning a new language in 1994. Nigel Caplan has produced LingoMaster which could help. Again shareware with a registration fee of £5, though you can opt for an unregistered version of £1 without support.

LingoMaster uses a variety of memory techniques to aid you. The program works on all the 32-bit range and comes with over 2,700 pieces of vocabulary in four languages – French, German, Italian and Latin. There are also two tutorials and interactive help with password protection on three levels for school users. For further details contact Nigel Caplan, 33 Alwoodley Lane, Leeds, West Yorkshire LS17 7PU.

Games people play

For those who enjoy flight simulators then Riscy III is abroad. In its previous incarnations it was RiscyGame which became Warfare – RiscyGame II. RiscyGame III – The Final was been seen around but this was revamped to RiscyGame III – The Return. The Final will be the fourth version. Have I lost you yet?

Anyway using Simis' Flight Sim Toolkit, Russell Mckendrick has put together a very playable flight simulator with a choice of weapons and minimal instructions. If you are used to the controls you'll have no problems. If this is new to you print out the help file – it's easy once you know how.

PD LIBRARIES

8-BIT HOUSES

8-bit Software, 17 Lambert Park Road, Hedon, Hull, East Yorkshire HU12 8HF.
BBC PD, 18 Carlton Close, Blackrod, Bolton BL6 5DL.
HeadFirst PD, 97 Chester Road, Southport PR9 7HH.
JJF PD, 49 Hollyberry Close, Winyates Green, Redditch, Worcester B98 0QT.
Mad Rabbit PD, PO Box 4, Crigglestone, Wakefield, West Yorkshire WF4 3XE.
Masterdisc, 2 Seaview, Hoylake L47 2DD.
Welsh Boys PD, 88 Queen Street, Barry, South Glamorgan CF62 7EE.

32-BIT HOUSES

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Arcaynia, PO Box 1927, Sutton Coldfield B74 3QZ.
ArchAngel PD, PO Box 41, Exeter, Devon EX4 3EN.
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ARM PD, 109 Woodland Drive, Cassiobury, Watford WD1 3DA.
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Different Ideas, Eyton House, Eyton, Leominster Herefordshire HR6 0AG.
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LowCost PD, 6 Furzeland House, Sheephouse Way, New Malden, Surrey KT3 5PH.
Moonlight Graphics, PO Box 3569, Cape Town 8000, South Africa.
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Planet PD, 37 Manor Drive, Berrylands, Surbiton, Surrey KT5 8NF.
Skyfall, PO Box 2220, Birmingham B43 5RZ.
Swop It PD, 7 Salterns Terrace, Bideford EX39 4AG.
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Art Works

Version 1.5

The latest version now includes full support for 24-bit sprites, making it the first Acorn graphics package to support full colour sprites. It is also compatible with the new graphics filter system used by Impression and includes a filter for TIFF files (the industry standard format). ArtWorks now includes the ability to print and separate these full colour images. Finally 1.5 is also a new 'fast load' version of ArtWorks - this is an advantage to all users but particularly useful for relatively slow filing systems such as CD or networks.

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To mark the release of ArtWorks version 1.5 we thought we would take the opportunity to remind you of some of ArtWorks most outstanding features:

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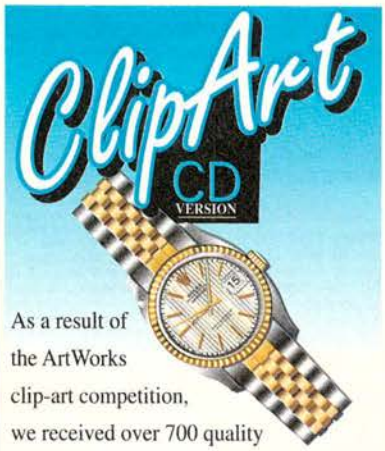

As a result of the ArtWorks clip-art competition, we received over 700 quality entries - this CD contains the best of them and many more ArtWorks examples (and the ArtWorks Viewer so that non-ArtWorks owners can view them). The illustrations can be used by anyone for incorporation into a growing range of Acorn applications that can take ArtWorks files. The disc also contains dozens of 24-bit high quality photographs (ideal for use with the 24bpp version of Impression and ArtWorks 1.5) and a demonstration version of AudioWorks with example audio files.
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Lending a hand

Mike Cook provides solutions to another selection of your problems

AGENDA

- Robotic arms
- Computer-controlled chess boards
- Upgrade priorities
- Back issues
- Budget animation
- Hard disk incompatibility

Q I AM undertaking an A-level Technology project to build a robotic arm. It will act as a teaching aid to show some of the processes involved in robotics. I plan to create a basic working prototype with three stepper motors to be controlled by my BBC Micro with an interface of some sort with the User Port.

It should have the ability to pick up small objects and move them to another location. I hope that you can give me some information on this and point me in the right direction.

I have a fair knowledge of BBC Basic and I heard from someone that arrays would be useful for storing the position that the arm would be moved to.

I was also looking at how the arm could generate feedback so that if it was knocked off course it could correct itself. If you could tell me how many of these ideas could be implemented on a BBC Micro I would appreciate it. – **David Lenaghan, Yardley, Birmingham**

A *I do wish that teachers would stop giving robot arm projects to their students. This inevitably leads to disappointment as it is a much more difficult project that you might imagine. The first major problem is that of mechanical design. It is a difficult task to design one and an even more difficult task to make it.*

The tolerances you have to work to are quite high and anything more than a rudimentary arm is virtually impossible at this level. In fact I have a small commercial robot arm which consists of five stepping motors and numerous pulleys and cords. This cost well over £300 and is always jamming up.

Secondly, the software needed to control it properly is quite complex. On the simplest level you could have it controlled by the keyboard and the computer then records the movements you make. Then the computer simply plays back the sequence of movements. This is the basis of the Lego Technic computer controller.

However, hysteresis and small errors soon mount up if the sequence is repeated a few times and the whole action falls apart. Compensating for this requires remote sensors so that you can place the arm into a known position. This means a sensor for each axis of movement.

The problem you have here is that your expectations are far too high and the full project is probably beyond the time, money and skill available. Therefore, I would suggest that you take a short cut wherever you can. Look at the Lego system and see if you can use any of their designs. Forget the stepping motors and use the Lego ones.

Finally lower your expectations or, if possible, change your project. As an alternative I did see the Shadow Project at the Acorn World show. This used a novel form of hydraulic ***muscles*** *to produce movement. Twelve of these were used to control a small walking platform.*

However, with the interface and all the parts you'll not get much change out of £500. Sorry to be so negative, but I tell it like it is.

Check make

Q I AM involved with a computer project which has partly been inspired by the World Chess Championship. I am building a chess board which will be linked to a BBC Micro. Under the board will be a series of 64 reed switches – one for each square – and each of the chess pieces will have a small magnet in the base allowing the computer to interpret the moves.

This will be used initially to keep a record of moves made in conjunction with time-keeping and eventually incorporated into a computer chess game. My main problem comes in linking all 64 switches together to the computer. I am reasonably competent in electronics but I would appreciate any assistance you can give regarding the method.

The main problem I can see with this idea is that up to 32 switches will be on-off at a time. This differs from a keyboard where a maximum of three to four keys are pressed. Can I use some form of logic gate system? – **Ben Drury, Halstead, Essex**

A *What you need here is a multiplex board like the one featured in the December '85 Body Building article. This was designed for 32 inputs and 32 outputs and plugged into the User Port.*

However, it is a simple matter to expand this to 64 inputs. In fact the design can easily go up to 128 inputs without any trouble. As you don't require the output side that part of the circuitry can be omitted.

Upgrade pointers

Q I HAVE an A3000 with 2Mb ram, RISC OS 2 and no hard drive. I am not sure which ARM chip I have, if any. It would seem, talking to colleagues and reading requirements for software, that there is an increasing need to upgrade my machine.

I am considering upgrading to RISC OS 3 with ARM3 and an 80Mb hard drive. Would this affect the performance of my existing software?

I am also a little confused with respect to hard disk drives. Both external and internal are advertised for the A3000, but I was under the impression that only externals could be fitted without exchanging the present floppy. There is also IDE and SCSI – whatever these may mean or even whether they are *both* appropriate.

As you can probably appreciate I am a user rather than a technician but I am concerned at the increasing number of utilities and games that will not work on my present machine.

If the upgrades I propose are installed will they affect the available memory, as I have a multi-tasking PC Emulator among other software which needs a minimum of 2Mb to work effectively. In other words, is a further upgrade to say 4Mb necessary or will this be taken care of with the hard disk? – **T.D. Butler, Stretton, Burton-on-Trent**

A *Upgrades can be quite confusing for experts, let alone beginners, so let's start at the beginning: Your machine has an ARM2 chip at present which can be upgraded*

➤

Back issues

Q I REMEMBER reading in the Body Building column in March '92 about using a sound sampler as an oscilloscope. Unfortunately, I don't have the December issue so I can't make the sampler. Do you sell photocopies of articles in back issues, or the complete issues? – **John Lee, Chelmsford, Essex**

A *You can obtain back issues for up to six months from Europress Direct in Ellesmere Port. All the back issues of the Body Building articles are available from Musbury Consultants for a nominal charge of £1 each. The Body Building software can also be supplied for £1 a disk too – just state what disk size you need.*

However, the Sound Sampler articles did run for five months and these are available as a monograph reprint for just £2, again from Musbury Consultants.

➤

to an ARM3. Now the only one major difference between these two chips is that the ARM3 has a memory cache. This is a small amount of storage space where the processor can store instructions it has already read in from the main memory.

The reason it does this is that in many programs the same set of instructions has to be repeated many times and having them stored on the chip with the processor saves the time it takes to get them from the main memory time after time.

The upshot is that the software can run up to five times faster, although on average this is more like three times. Existing software should run faster with no problems. If there is a problem this memory cache can be turned off by a software command and it then behaves like the earlier chip. So upgrading to ARM3 means that your machine runs faster.

Now the only option you have in the operating system is to use RISC OS 3.1. (The earlier 3.00 had some bugs and is no longer produced.) This will allow you to run the latest software as it has more features than version 2.

Some programs check to see if the latest system is fitted even though they do not necessarily use the new features. It's just that they were developed in the new system and it is rather too much bother to see if it works with the earlier one.

The trend is that most new software will need RISC OS 3.1 so I suggest that you upgrade as soon as you can. There have been a few problems with software compatibility but they have nearly all been sorted out. If you run into trouble get back to the suppliers.

Now as to hard disks: This is rather a more controversial subject. You can get an internal disk for your A3000 without taking out the floppy. In fact if you think about it, a computer without a floppy disk would be cut off from having any new software added to it.

There are two main types that refer, not to the disk, but to the way it is connected to the computer – IDE and SCSI. IDE is a method of just connecting hard disks, and is the lowest cost option.

With SCSI you can connect up to seven devices although some will have to be external to the computer. These can be extra hard disks, removable hard drives, CD-rom reader, optical drive, scanner or networking card. In fact most major peripherals can come with a SCSI interface. It is more expensive, but is the one I personally would choose.

As to the memory, the size of hard disk does not affect this at all. You will still only have 2Mb available. I would strongly recommend that you upgrade to 4Mb. In computers you just can't have enough memory.

I would prioritise these upgrades in the following order: RISC OS 3.1 (as you already have 2Mb), more memory, ARM3 and hard disk drive. However, if you are going to do the lot at once it might be worthwhile looking at some of the higher end Acorn computers.

Considering the secondhand value of your A3000 , they might come to about the same price.

You can write to Mike Cook c/o Acorn Computing, Europa House, Adlington Park, Macclesfield SK10 4NP.

He will answer any questions about difficulties you may be having with your machines, mainly those to do with hardware. If you want a personal reply ensure that you enclose an SAE with your letter.

Animated subjects

Q I AM quite interested in animation and have looked through several Acorn directories but can find no program to fit my requirements – to easily animate a main subject and also other background subjects for under £40. I also have an old light pen from my Amstrad. Is there any way I can use it in my Basic programs? – **Richard Livesey, Whitefield, Manchester**

A *If you want to animate different objects at different rates then I suggest that you look at Tween from Oak Computers. This will allow you to take drawfiles and stitch them together to form small movies. At £34 this is inside your budget.*

The same company produces Splice, which does the same thing at the same price for sprite files. However, before you take the plunge see if you can pick up anything similar in the Public Domain – try writing to a few libraries.

The light pen can only be used on the Model B and Master as it contains the special hardware. Anyway, light pens are one of those things that sound much better to use than they really are.

No hard access

Q MY 4Mb A3000 is interfaced to an IDE hard drive via an Orion Computers I/F podule connected to a twin podule expander. Since upgrading to RISC OS 3 and ARM 3 the new desktop works but I am unable to access the hard disk.

The company who upgraded my machine referred me to my IDE hard disk supplier but they have ceased trading. I really do not want to fork out a further £400 for another disk drive. Have you any solutions? – **R. Asnery, Shelton Lock, Derby**

A *The problem here is the slight difference that RISCOS 3 makes in accessing driving modules stored on eprom on the cards. It is no problem if the developers followed all the rules, but as the company have gone out of business it looks like they didn't.*

This should only need a small change in the software but the problem is who can do it. I suggest that you approach an existing manufacturer of IDE drives and see if they can help you.

I did hear that Ian Copestake Software had a similar problem and that they have sorted this out. Perhaps they would be good people to start with.

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Need an expert?

Now you need look no further than your Archimedes. Michael Rozdoba investigates

ARTIFICIAL Intelligence is an extremely important and interesting sector of computing. Yet it is one which is not often touched on in the home computing market. Perhaps this is not surprising given much of it lies at the cutting edge of science. However, it is beginning to make inroads into the real world and one such road is that of the Expert System.

This is a computer program which encapsulates knowledge in a certain subject area and possesses the ability to deduce conclusions from this knowledge given an enquiry into it.

Making a computer behave intelligently is a pretty difficult task, so to simplify the problem, expert systems concern themselves with very narrow subject areas and are further restricted to those where decision making can be formalised. Possibilities are diverse – from the medical diagnosis of back pain to making legal judgements.

PRODUCT SPOTLIGHT

Product: Observess – Expert System Shell
Price: £20
Supplier: Rebecca Shalfield, 51 Swallowfield Road, Charlton, London SE7 7NT

Construction of an expert system usually requires both an Artificial Intelligence expert – sometimes called a Knowledge Engineer – and a human expert in the subject being analysed.

Setting rules

Via a series of questions, the AI specialist will attempt to codify the human expert's knowledge to produce a series of rules which comprise the expert's decision making process.

This knowledge base can then be combined with the rule processing algorithms, known as an *inference engine*, to produce an expert system.

Now you can investigate expert systems for yourself, with the aid of Observess, a multi-tasking desktop application which aims to be an expert system shell. It consists of an inference engine to process enquiries into arbitrary knowledge bases and the ability to allow you to create and edit your own knowledge bases with each saved as a file.

Furthermore, you'll receive two copies of Observess. The full one and another called ObserveRT, a run-time version which is a cut-down variation on its big sister with the editor code removed. The latter may be distributed with your knowledge bases to other users, so they can use them for consultation purposes. You are even permitted to sell any such expert systems which you devise.

Observess comes with two sample knowledge bases, on traffic lights and recognising a computer type from its hardware description.

Creating a knowledge base

Observess installs itself on the icon bar like most desktop applications. Clicking on its icon opens a window displaying information on the current knowledge base, if present, such as title, author and so forth.

From this window you can access all the editor functions as well as two run-time choices Consultation and Explanation. Each of the editor functions leads to a transient dialogue box – the kind which automatically closes when the menu disappears.

Knowledge bases may have only one goal or initial question defined at a time, which is reasonable. In practice a base will be concerned with only one question, such as,

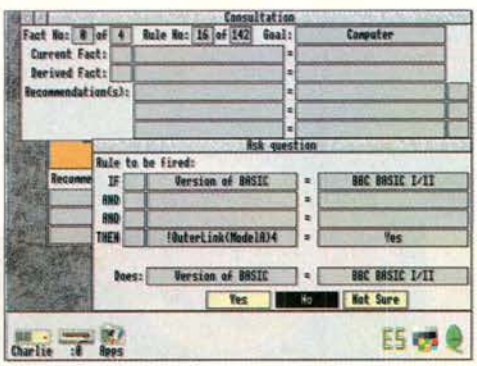
What's wrong with my back?

To create a knowledge base with Observess you may enter up to 1,000 rules. Each of these takes the form:

```
If [not] (<variable1> = <value1>) a
nd [not] (<variable2> = <value 2>)
. . . then [not] (<result variable>
 = <result value>) CF: <certainty f
actor>%
```

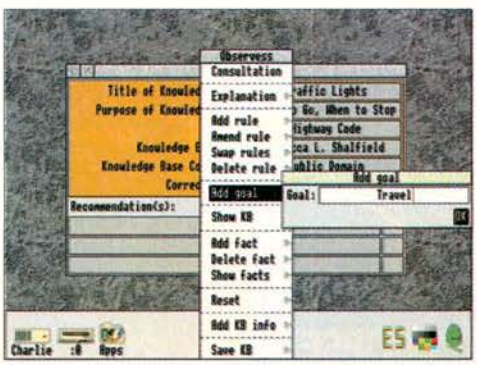
The [not]s are optional, and you may have between one and three variables involved in the condition. The last part concerning certainty factors needs some explanation.

Each possibility <variable> = <value> can have a probability or certainty associated with it, and



● *Use Observess to work out which computer you're thinking of*

● *One of the two public domain bases supplied for use to use and experiment with*



● *You set the goals ...*

these will be used in calculating the certainty of the result. At the start of a consultation you can choose to be given several answers or recommendations. The most likely results will be listed according to their certainty factors.

For instance, you may have a variable called *WeatherTomorrow* which could be given the value *Sunny* with certainty 80 per cent if the condition *RedSkyAtNight* is satisfied.

You may wish to use an OR conjunction in a condition. This isn't directly supported, instead you must split the rule into two, with each using one of the OR arguments, but with both rules having the same conclusion. This will produce the desired result.

Another restriction already noted is that only three variables are allowed in a condition. More can be used by splitting them into groups and setting an intermediate variable called a *link* according to the result of each group. The end variable can then be set by an extra rule which brings together each link variable.

Although you may think that this relatively simple rule format is limiting, a surprisingly complex reasoning process can be codified in this manner. As to whether this method makes such a process easy or not, is another question. Likewise, the ability to exploit this information depends on the power of the inference engine.

Consultation

Once a knowledge base has been created or loaded from file, a consultation can take place. The inference engine will scan each rule in turn and, when it encounters a variable of unknown value, will ask you a question of the form:

```
Does <variable> = <value>?
```

to which you may respond *yes*, *no*, or *unsure*. After asking all the questions it needs, if able to, it will come up with one or more recommendations. In the case of the traffic lights base, you will be asked questions about the state of each light. The response will then recommend how you should proceed or not.

Having been given an answer, you may request an explanation. The inference engine will allow you to examine the rules used and their individual conclusions by which the decision was arrived at.

User interface

The aim for all applications should be RISC OS compliance. Anyone intending to sell such software should have a copy of the RISC OS 3 PRM and the new style guide, which is now available, and unfortunately Observess falls far short.

Double-clicking on a file before Observess is loaded should load both immediately – it doesn't. Trying to quit Observess while there is unsaved data should produce a prompt giving you the option to cancel the action or discard the data.

Instead, if you want to quit via the iconbar menu you will be prevented until you save the file or explicitly remove it. But if you quit via the task manager, your unsaved file will be discarded without warning.

Having said that, at £20 this is more of a minor let-down than a fatal blow to its value and usefulness. Also, I would like to have seen a slightly different overall approach. More use of permanent dialogue boxes, and perhaps a tool box or bar, instead of the long menu.

It should be said that the accompanying A4 manual is quite comprehensive at about 20 pages, with both a contents page and an index. Though I would have preferred more information on expert systems and less *how to* explanations. Four short paragraphs on using a standard *Save as:* dialogue box are not needed.

Performance

The program seems unnecessarily slow. A consultation on the Acorn computer knowledge base took over a minute to run on a 25MHz ARM 3 machine, after all the questions had been answered. The main reason is that the program has been coded in BASIC where C or Assembler would have been a better choice.

It would have been nice to see support for numeric quantities like age, within a base, together with operators like *less than* and so on. I am also very dubious about the maths underlying the way certainty factors are manipulated.

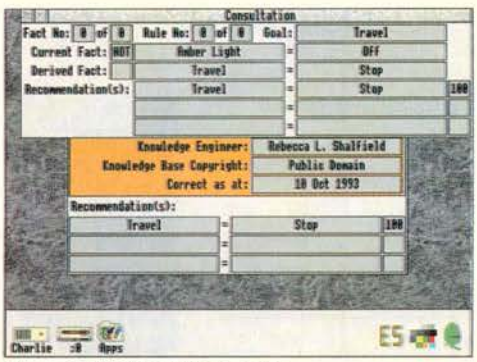
The inference engine is fairly simple. For instance, I asked the traffic base what to do if the red light is on, amber is off and I'm unsure of green. The answer is to stop. This is contained in the knowledge base, however the response Observess gave was *unable to reach a decision*.

It is clear that this is because the inference engine sets rule conclusions to uncertain when any part of the condition is uncertain. What it should do is consider all alternatives and run the remaining reasoning for each of these. That would have given the correct answer.

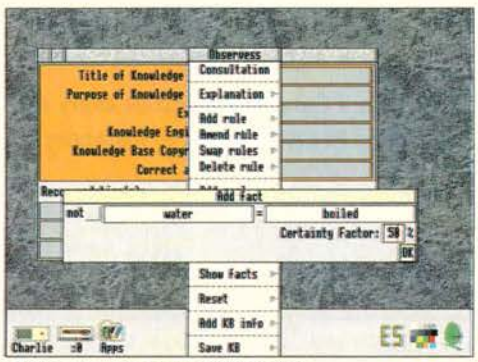
Summing up

I wouldn't want to use Observess for any real applications. However at the price and as an introduction to Expert Systems, I think it is a worthwhile buy. All purchasers will receive a newsletter every few months and a postal helpline is available too.

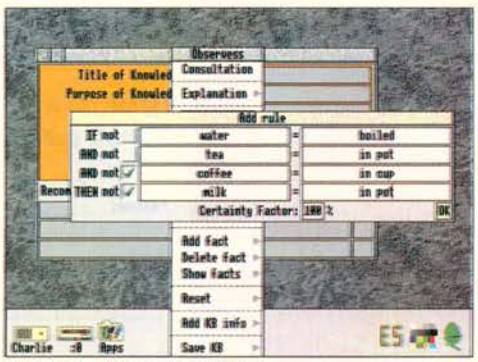
Upgrades will be provided at cost of the price difference, which may well mean they are free. For an initial outlay of £20, you can't ask for more than that.


Consultation
Fact No: 0 of 0
Rule No: 0 of 0
Goal: Travel
Current Fact: NOT Amber Light = Off
Derived Fact: Travel = Stop
Recommendation(s): Travel = Stop 100
Knowledge Engineer: Rebecca L. Shalfield
Knowledge Base Copyright: Public Domain
Correct as at: 18 Oct 1993
Recommendation(s):
Travel = Stop 100

● *... and by the rules you set determine the recommendations*



● *Create your own systems for simple or complex purposes*



● *Setting the certainty of the rules as well the fact*

NEXT MONTH

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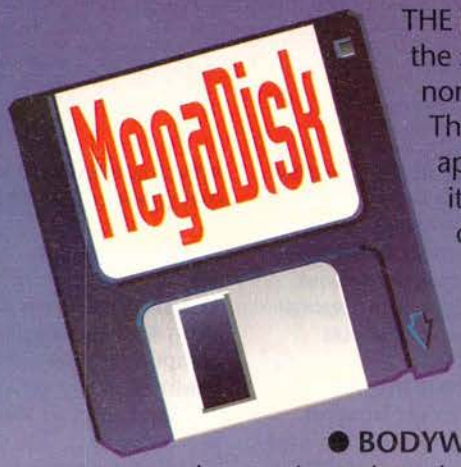

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- TechForum: The ins and outs as well as the whys and wherefores
- FontManager: How to use the Outline Font Manager with Basic examples
- Mike Cook: Enters the realms of more hardware DIY

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CD-rom is simply a mass storage device for computer-based information and its full impact is only just being felt. What CD-rom offers, above all else, is a means of storing video movie, photo stills and sound samples, all of which need masses of disk space.

Parts of the PC market are rapidly filling their CDs with games that would otherwise need vast numbers of floppies – and indeed do. By putting a game needing 12 disks on a CD you cut production costs for the publishers dramatically, while the people pay more in hardware and software for the privilege.

It sounds great but think, you could get 464 high density PC disks on a CD-rom. Games don't come on that many disks so look closely at how much empty CD you're paying for. Bear in mind it costs about 30p to duplicate a floppy disk and only 50p for a CD-rom In the saner atmosphere of the Acorn market CD's are seen as primarily aimed at education, as the current software has a more education than leisure bias.

However, until the launch of the Morley and Cumana lower priced CD-rom drives – featured in the November issue of *Acorn Computing* – the price was out of most schools' and individual's range. So what is there to choose from?

An education bias

SINCE **Granny's Garden** has been around the Acorn market from BBC B days it was nice to see it in a CD-rom version. It would not be a reason to buy a CD-rom drive but if you have the hardware it's worth buying this software. As 4Mation have had more space to play around with, the music and sound effects are enhanced over the floppy version, as are the graphics.

The basic story and puzzles remain the same as the four disk 32-bit floppy version – reviewed in the August issue of *Acorn Computing* – and the only real extras are an additional choice of fonts and an audio introductory story. The incredible thing about Granny is that children and teachers (and parents) are drawn to it again and again, regardless of how many times they have played it.

Aimed at Key Stages 1-3 in English, Maths, IT and Geography, there are ideas for further work in the manual and extra resource packs to extend the life of the program as well as the learning process for both homes and schools.

Compilation and ease of access are what make CD-Roms useful classroom resources and at present few can better the science and environmental CD-Roms from Academy Television/ILP. The first series of science titles is **The Elements** which uses every interactive multimedia technique to get across its potentially difficult subject matter.

Designed for pupils at Key Stages 3-4, The Elements introduces the periodic table, atomic structure and radioactivity and uses Replay video clips and animation to explain properties and structures. Its interactive features include an *atom builder* which allows pupils to construct their own atoms, quizzes against the clock and an exploration of radioactive decay and half life.

● *Granny's Garden – an adventure and a story*

You can choose either the periodic table, atomic structure or the quiz. From the periodic table the division, groupings and individual elements can be explored in terms of properties, history, uses, atomic structure and a range of experiments – including video footage of those too dangerous to perform in the school lab.

Atomics

There is a large section devoted to atomic structure and the excellent use of animated graphics helps students to visualise the atomic models, what happens to electrons, protons, neutrons and so on.

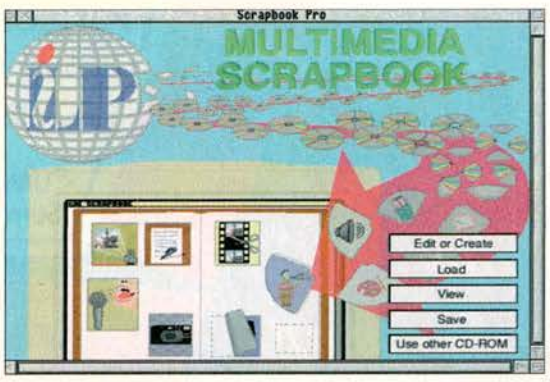
Throughout, there are pages of textual material describing atomic theory and history. The sub-topics include: Atom building, radioactive decay, isotopes, decay series and a very full section on half life.

The quiz section offers both a 90 second and a five minute game along with a sudden death quiz, all of which help reinforce the pupils knowledge and understanding of the nature of elements in the periodic table.

There are even a liberal number of activity sheets covering everything from word searches and crosswords to graphing activities and investigations.

Included in all the ILP packages is Scrapbook, a disk-based application which can be used to view, select and save several forms of data into the pupil's own file.

The file can be saved and reloaded for additions, deletions and further editing. This can include video clips, still photographs, graphic images, animations and text – in short, all



● *ILP's Multi-media Scrapbook application*

PRODUCT SPOTLIGHT

Product: Granny's Garden
Price: £34 (Resources Pack £15)
Supplier: Cumana, Pines Trading Estate, Broad Street, Guildford, Surrey GU3 3BH.
Tel: 0483 503121

CD-Roms — the next big thing

Chris Drage and Pam Turnbull look at what the software holds in store

the resources available on the CD-rom. Scrapbook establishes links to the CD-rom materials and must have access to it at all times. What in fact Scrapbook achieves is the ability to create a personalised subset of material available in The Elements.

This might take the form of a theme such as the discovery of inert gases from an historical perspective or a presentation on Magnesium, while you might prefer to use it to compile material for revision purposes.

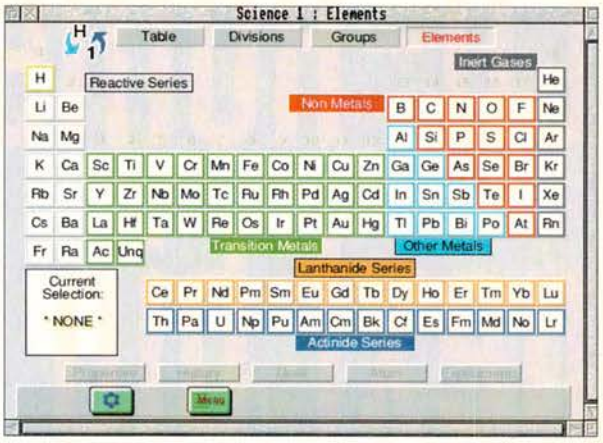
Although it takes a little while to get to grips with Scrapbook it is a very flexible tool for use in conjunction with the CD-rom material and recognises the need in the National Curriculum for children to not only access data but to record it and make it their own.

HEALTH WARNING

Most CD-Roms need at least 2Mb ram but preferably 4Mb and RISC OS 3.1. Always check your specification with the suppliers before purchase.

The Elements has already won the best education CD-rom award at the 1993 European Multimedia Awards and it's not surprising – in terms of presentation and description of a most difficult subject it comes up trumps. I only wish I had had access to material like this when I was

➤



● *Intuitive way to explore the elements*

studying chemistry.

Also from ILP is their environmental series. The first title is **Water** and contains detailed coverage of environmental issues with over a thousand photographs and illustrations, video from the library at Yorkshire Television, maps, audio and thousands of pages of text all linked together under the common theme of water.

This vast bulk of information can be accessed in several ways. At a basic level investigations can begin graphically from the River Screen – a simple but powerful interface which allows the user to quickly access the database by simply clicking on the aspect, theme and time band of interest.

The main river graphic is available in both plan and isometric views and can be scrolled. At a more detailed level is the Investigate Section which allows the user to discover how people's use of water has changed over time.

The information is cleverly set out in time bands, topics: Agriculture, transport, industry, recreation, fishing and domestic and aspects: Political, social, economic, scientific and health.

The time bands stretch from 10,000BC to AD1993. Thus choosing *agriculture*, *economic* and the lowest time band will give information about the earliest economic history of agriculture.

In addition to all this, there are a number of case studies chosen to provide comprehensive information on specific environmental topics and issues such as the Mississippi flooding, the Shetlands oil spill and cholera in Asia. A glossary is also available providing definitions of hundreds of words used in the program, plus it speaks the word to help with pronunciation.

Searching the database can be done in several ways. There is a search utility which features both a full index and contents section – emulating the way a book is set out. The contents section guides the user to relevant parts of the disk through a series of major themes and sub themes.

Powerful

The Scrapbook application can also be used with the Water CD-rom as with The Elements, but to be truly useful there is a need to be able to limit the information presented to a selected theme which may be related to the current class topic/theme.

TrailSave is a powerful utility that enables the teacher/pupil to do just that. You can *mark* and save a series of slides from the Investigate Section and play them back in any order.

Up to 100 slides from any part of the Investigate section can be saved and re-ordered to create an interesting presentation or used to present a predefined path for pupils to follow.

The saved slides can then be displayed using the TrailSave Viewer. The trail saver and viewer screens could be used to present a series of slides on a particular theme, without having to go through the whole investigate database.

Water is another excellent compilation of data which will find wide range applications across the entire curriculum. On the minus side I found fewer video and sound clips than in The Elements but this is outweighed by the enormous scope and depth of the information and the comprehensive search facilities.

If you are looking for a reason to spend the school's GEST money on CD-rom hardware, The Elements and Water will be excuse enough – excellent resource materials for Key Stages 3-4.

On a different subject area again is **Directions 2000**. There is a dearth of material for French teaching and this interactive project encourages and develops as well as introducing new concepts.

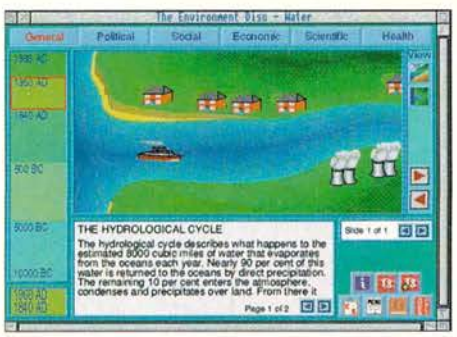
It's nice to see CD-roms which are more than encyclopaedias and Directions 2000 successfully combines being a resource with its own projects and a starting point for others.

It can be used at home or school and the last section of the manual is devoted to workcards. Directions 2000 covers a range of ages and abilities but would probably be most at home with the GCSE 14-16 year old student. The package can be

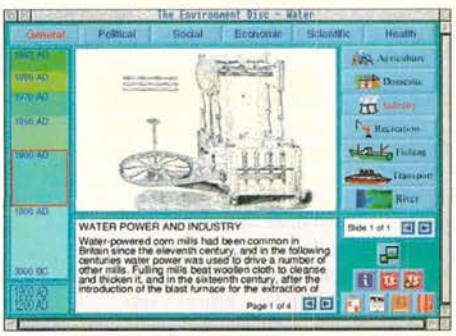
PRODUCT SPOTLIGHT

Product: Science – The Elements
Product: The Environment – Water
Product: Directions 2000 – French
Price: £130 each
Supplier: Interactive Learning Productions, North Street Court, North Street East, Newcastle Upon Tyne NE1 8HD.
Tel: 0532 461528

● *Explore ancient environments...*



● *...the natural cycles...*



● *...or the industrial consequences*

split into three, the *Browser* which has a hypertext structure to it starting with *le système solaire* and coming down a tree of a variety of roots to France and eventually to *un sac*. Next there is the *France Vacances* section offering you an orienteering course or castle adventure. Finally there is the *Lexicon*.

Help is always available and is spoken clearly in English. Strangely, the French speech is quieter.

Starting with Lexicon, there is an interactive dictionary of over 1,400 words which is put into a sentence spoken in French with an optional English translation at the click on the mouse. There is also a photograph of the subject as well as the ability to speak a word or sentence yourself using the microphone which comes with the package.

Icons are available to select past, present or future tenses as you can move to the next word alphabetically or search for a particular word. In addition there is the ability to hide text and/or pictures.

Interactive

My only criticism is that the recording time is too short and I couldn't find a way of lengthening it if you want to speak the whole sentence rather than just the word. Click another icon and you can hear your own words and compare them to the native French speech. An enjoyable way of learning syntax and the nuances of language.

Furthermore, the resource can be exported for further work and, as with the other ILP packages, Directions 2000 supports the Multimedia scrapbook.

The Browser interacts with the Lexicon and you can work from the top level of the solar system or choose the tree icon and select a particular branch or twig. There is a commentary in French which you can opt to see and/or hear.

France Vacances is a simulation which can be set to different difficulty levels for the orienteering feature, the Forest. A printed map is provided and as you wander around the Ecotrail you must collect clues in the right order. The interface is simple to use and the photographs are superb. Results can be saved and analysed later.

The other section to France Vacances is the Chateau. At first sight this is a guided tour where you can just go with the instructions and follow the guide closely. But telling the tourists to follow closely is clearly a clue to do the opposite – which it is.

Individual excursions will reveal cakes, keys and eventually treasure. The trail mixes photographs of the real Chateau de Neautun with drawn images and the integration works well.

The user is in control of the direction and pace of Directions 2000 and the sheer mass of resources make it a useful addition to any library. I would have liked some more control over the package.

The World of Number has been produced with the National Curriculum Council and uses Acorn Replay to a greater extent than any education package I've come across yet. The majority of the instructions and explanations are via video but I would have liked the text in some format as the speech is difficult to follow at times – but that could just be my conservatism showing.

There are four products in the series, all of which are aimed at Key Stages 3 and 4. *Number Games and Short Tasks* is the first and as with all the programs there is an introduction program, which contains some interesting information, as well as the main one.

This program is really a reinforcement tool as the problems are set on screen but the work is done away from the computer in groups or individually. There are two programs – Dressing Table and Stepping Stones – which offer the solution on the computer. The solution itself is not shown but the on-screen students are seen solving the problem, then it's your turn.

The World of Number series comes into its own with the Worksheet program – also on each of the CDs – a set of notes, projects, problems and questions based on the work already done. Teacher or student can also access the data on the CD-rom for further work in other applications.

The World of Number takes an interesting and unusual approach but at the same time it is quite compelling. Short Tasks are a series of 13 explicit mathematical tasks which could be used to start a lesson, pose a

● *Where now in your journey through the Browser?*

● *Abroad you must find your way around the countryside*

France Vacances
Allez tout droit.
Tournez à gauche.
Tournez à droite.
Il me semble que j'ai vu une brioche sur la chaise dans la deuxième pièce.

● *Hidden beneath the Chateau are strange creatures with even stranger requests*

PRODUCT SPOTLIGHT

Product: World of Number
Price: £59 each
Supplier: New Media Projects, 12 Oval Road, London NW1 7DH.
Tel: 071-916 9999

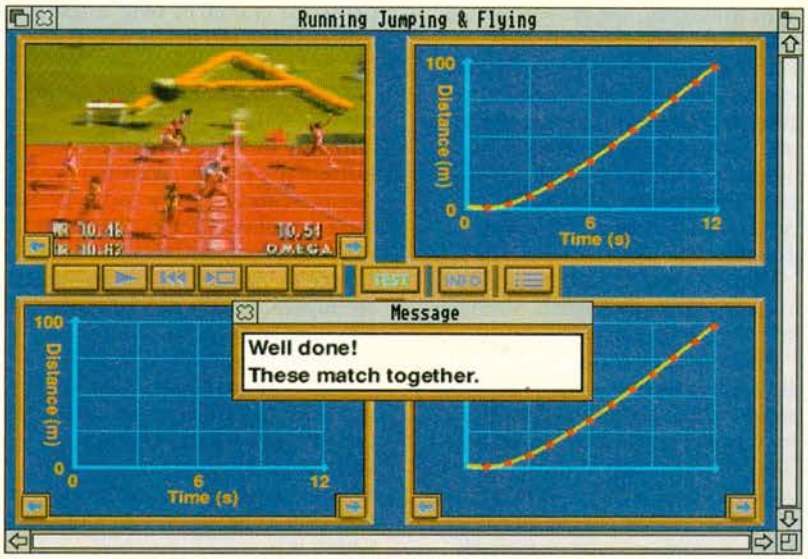
homework problem or be used as revision. As with Number Games, working in small groups seems to be most productive. The areas dealt with here cover number sequences, arithmetic and estimation.

Perspectives is next and follows the same layout. This topic is split into two applications - RunJumpFly and Cubes. The latter is very straightforward with the video showing a set of cubes which come in eight configurations and have four views with eight different sets of cubes.

The problems are hinged on visualising three dimensional structures and support a range of curriculum areas such as shape and space. You are given one view and the remaining three have then to be matched. When done the rotation is seen in a full-sized window.

RunJumpFly is concerned with understanding graphs that describe movement and is similar in format to Cube. This uses Olympic footage, as well as scenes from the African plains and international airports, as Replay files. There are three graphs supporting each movie where the correct axes and graph lines should be matched. The support materials give help on classroom use and extending both exercises.

Picture Gallery is first and foremost a resource and if you don't buy any of the others in the series this is a must for a library. There are over 700 colour photographs and again a set of worksheets. The pictures are divided into 16 sections from Food and Containers to Space and Perspective, from Spirals to Sequences in Time.



● *Matching graphs and movement in the World of Number*

A toolbox utility is supplied so that distances and angles can be measured. You can add marks to the image, draw lines, colour these and get the distance or angle read for you. This can then be exported into other applications or printed.

Browsing

Questions and activities are also provided but the program suggests that students be allowed to browse through sequences and devise their own problems.

My favourite of this series is the mathematical adventure game *Who Stole the Decimal Point*. This stands up very well at home as well as in the classroom.

Again the instructions and implementation are all based around the desktop video. This interactive adventure follows the scenario when an electronic virus makes the decimal point disappear from all aspects of life.

The Acme Megalok Portal Transition Regulator gives the group of teenagers a clue, Integer Hall and its resident Count Integer – whose late father invented a new mathematical system without numbers or fractions. Needless to say the Famous Five-like investigators get into trouble and it is down to the individual or group to discover the clues to release them.

By exploring the Count's home there are numerous puzzles and conundrums and New Media's intention is that even the non-Maths enthusiast will find himself *hooked*. And it works. There are 12 puzzles to solve as well as seven other activities taking place.

The latter seemed to be irrelevant during the adventure and did confuse some of the players, but the worksheets take these problems, such as Fibonacci numbers, away from the computer and they are really only starting points for other work.

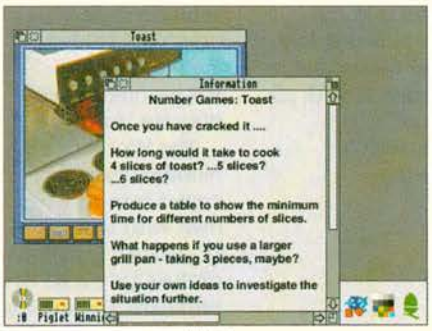
The World of Number is an excellent resource and at the price, superb value for money. New Media are also launching the Chemistry Set towards the latter end of 1994 and a look at the work so far is very promising.

The price is set for £99 though if you order pre-launch it's £79. Aimed at children from 10 onwards, it focuses on Key Stages 3 and 4 of new Attainment Target 3 and the biomolecular aspects of Key Stages 3 and 5 or NAT2.

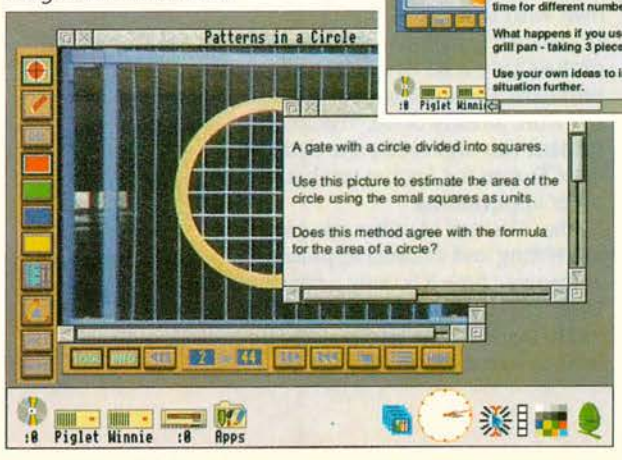
The front end is the periodic tables which gives way to 300 video sequences of chemical experiments and processes from group properties, competition reactions and qualitative analysis.

Added to this is a compound database, interactive graphics of molecules and structures, 100 element cards with numerical data which can be searched and processed into graphs and charts, 1,000 items including history, uses, hazards and the like and 400 photos of elements and minerals, plus an interactive quiz.

● *Watch the problem on video, then work away from the screen*


Toast
Information
Number Games: Toast
Once you have cracked it ....
How long would it take to cook 4 slices of toast? ...5 slices? ...6 slices?
Produce a table to show the minimum time for different numbers of slices.
What happens if you use a larger grill pan - taking 3 pieces, maybe?
Use your own ideas to investigate the situation further.

● *A Picture Gallery of images for further work*


Patterns in a Circle
A gate with a circle divided into squares.
Use this picture to estimate the area of the circle using the small squares as units.
Does this method agree with the formula for the area of a circle?
:8 Piglet Winnie
:8 Apps

On more general lines

APA Multimedia have made a virtue out of cramming as much as possible on to a CD-rom. The second **Really Useful CD-rom** is available and is packed full of something for everyone. The interface uses Genesis and APA's own GenUp compression system.

The topics covered are: Southern photos/sprite files from Australia and the Maldives of everything from Grand Prix racing to the Sydney Opera House, animal art also in sprite format, French exercises, general pictures and road signs both in drawfile format, Faulkners pictures/sprites and the *best* resources from RUCD1.

The GenUp delivery system makes access very straightforward and is an improvement on the first disk. The Indices directory contains ready-made Bookmarks of the files split into specific areas. You load these and double-click to find yourself at the appropriate part of the main application. You can also create your own Bookmarks of course.

Downloading data and files is made as easy as possible and is simple enough for even the most inexperienced user. Concept Keyboard support is also available within the Sneeds directory.

The French revision gives pages of English text with the French equivalent and pictures. Clicking the pictures gives the pronunciation by a native French speaker and all the data can be exported. There are also some basic grammar notes and questions.

There is no shortage of illustration and the PD files from RUCD1 give you even more: Animals in colour and mono, plants, trees, fruits, all in good quality scans, plus buildings, dinosaurs and geological features all as sprite or drawfiles.

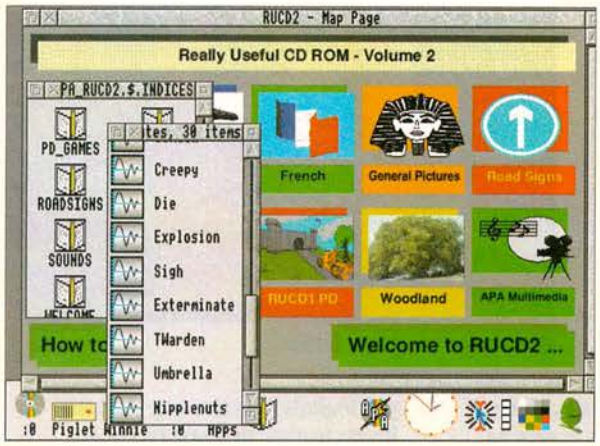
You definitely need the search facilities and Indices which was where I came across some sound samples, perfect for lovers of Dr Who and Red Dwarf, as well as a 1Mb plus file of the music from Star Wars.

Exploring this disk will keep you busy with PD utilities, animations, a couple of ancient games, fractals, a Forth compiler, network utilities, text advice and the Little Smalltalk language to tempt you.

Furthermore, if you have a Genesis Browser you can access some of the ideas and beta-test work done by Hampshire LEA which culminated in the Horizon Project.

PRODUCT SPOTLIGHT

Product: RUCD 2
Price: £49
Supplier: APA Multimedia, 8 Henley Business Park, Trident Close, Medway City Estate, Rochester, Kent ME2 4ER.
Tel: 0634 295222



● *Useful, accessible and something for everyone*

Book club

IT IS still true that the majority of CD-Roms are encyclopaedic, finding their home in a library – school or otherwise. These vary greatly in their depth and versatility.

The **Space Encyclopaedia** gives a good grounding in the subject but for enthusiasts it does not go far enough, although the use of hypertext makes topics easy to explore. There are 500 photographs, 30 animations and original movie clips making use of Acorn Replay. As usual all the resources can be exported for further work, it makes a good starting point and the photographs I found especially useful.

The text is well written – despite a few typos – but the layout on screen could have been better. If you find it difficult reading from the screen then **Sherlock Holmes on disk** may not have instant appeal. However, you can listen to the spoken word from the CD with headphones if you prefer.

This must be one of the most unusual disks as it contains all the text from all the Conan Doyle stories. You can flick between books and stories, leave bookmarks behind, search for particular items and when you've finished reading test yourself with a multiple-choice quiz for each story. The illustrations are limited to reproductions of woodcuts but the text itself is the real star.

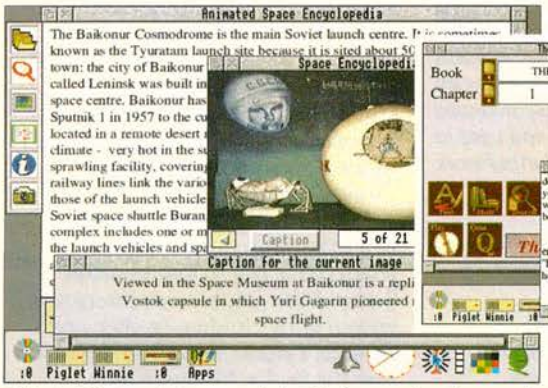
The Illustrated Bible follows the same format - not surprising as they both come from Animated Pixels - and both have to be loaded via a

PRODUCT SPOTLIGHT

Product: Space Encyclopaedia
Price: £75

PRODUCT SPOTLIGHT

Product: Sherlock Holmes on disk
Price: £25


Animated Space Encyclopedia
Caption
5 of 21
Caption for the current image
Viewed in the Space Museum at Baikonur is a repli
Vostok capsule in which Yuri Gagarin pioneered
space flight.
:0 Piglet Winnie
:0 Apps

● *Full of facts, pictures and details for use in other work*

● *The interface is elementary, my dear Watson*

floppy disk-based program as they are first and foremost PC disks. This, however, has little effect on their usability.

Key Plus is used in 2,000 secondary schools and there is a huge variety of datafiles available. Moving to CD-rom for some datafiles is a natural progression and **19th Century Biographies** is the first. What makes Anglia's development interesting is the cost element.

The biographies were compiled by three heads of history and the problem with any such production is knowing where to stop. Users will always notice who hasn't been included, however the cut-off here is all those who died after 1910.

Anglia had real problems increasing the number of women in the database. However, this is more a comment on that century than anything else.

An association with Holton Deutsch has borne the fruit of 175 pictures and the ability to import the data in charts and graphs allows, for instance, the analysis of role, nationalities and gender. For those who already use Key Plus and Keynote it is another very useful and affordable resource.

Anglia plan to release other datafiles on CD-rom, but are also about to release two standalone packages – **Human Biology** and **Castles**.

The former has been produced with Science Pictures and will need a 4Mb system to run it. This is a simple introduction to human biology for 11-14 year olds at Key Stage 3 and is worth the money for the resources alone as the beautifully clear photographs are normally difficult to get hold of.

A full-screen application, it is a multi-media book using text, draw and sprite files as well as around 60 Replay files – from maggots to rotting flesh. These are mute as this is seen as more appropriate for classroom use. As you'd expect, all the resources and a selection of worksheets are available for downloading to other applications.

The text is hypertext in format with keywords in yellow and the operation of the package is straightforward and intuitive. I particularly like the way that the layers feature of Draw has been implemented so that illustrations can be dissected – something which is impossible on a PC – also the computer animations such as the one for a ball and socket joint.

There is no passwording as yet, for instance, of the Reproduction system as with Sherston's Bodywise. So though the approach is usable with KS2 students, teachers will have to decide whether to use it at this level. It is also being marketed for KS3.

Definitely available for KS2 and above is **Castles.** A standalone package, although created in KeyAuthor, it has similar facilities to Understanding the Body. The first section is *About Castles* and looks at the information chronologically and gives a timeline of events, with important events leading to changes in the development of castles shown in blue.

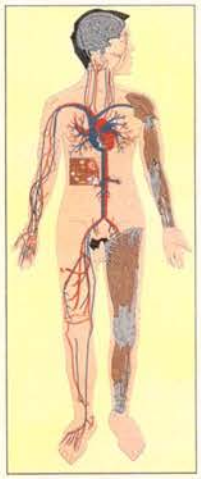
Text has purposefully been kept to a maximum of two boxes in length so as not to lose impetus. Some of the graphics are interactive encouraging children to click and explore. I particularly liked the way that the Replay files have been utilised. These explain something

PRODUCT SPOTLIGHT

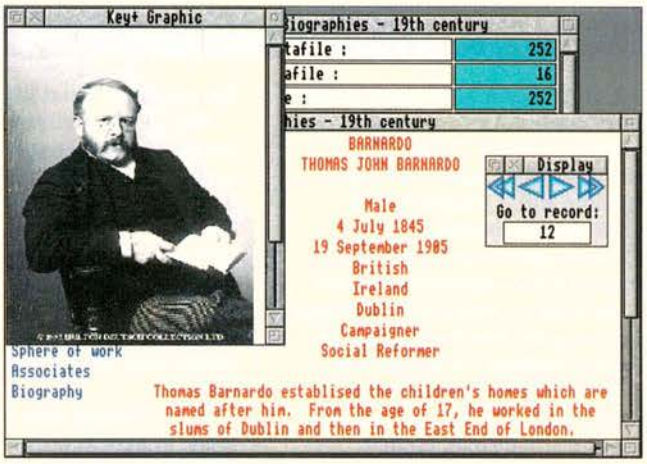
Product: The Illustrated Holy Bible
Price: £25
Supplier: Cumana, Pines Trading Estate, Broad Street, Guildford, Surrey GU3 3BH.
Tel: 0483 503121

PRODUCT SPOTLIGHT

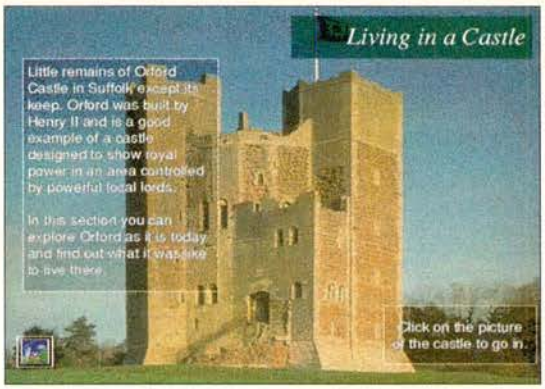
Product: 19th Century Biographies
Requirements: KeyPlus or KeyNote
Price: £25



● *One of the many drawfiles which utilises the layers feature*



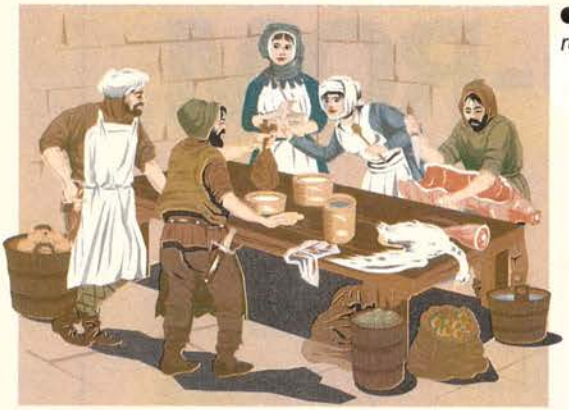
● *The familiar KeyPlus layout allows you to use the biographical data for a variety of purposes*


Living in a Castle
Little remains of Orford Castle in Suffolk except its keep. Orford was built by Henry II and is a good example of a castle designed to show royal power in an area controlled by powerful local lords.
In this section you can explore Orford as it is today and find out what it was like to live there.
Click on the picture of the castle to go in.

● *Welcome to Orford Castle*

● *Resources can be easily accessed and used in further work*

● *An easy to follow layout encourages exploration*



● *Kitchen life is reconstructed for you*

extra to the text and graphics and use the resources really only available to TV companies like Anglia and Academy.

The next section is *Building a Castle* and the red hypertext links are used to provide the glossary, linking ironsmith to iron and how it is used. This links well with other Anglia products giving a Key distribution of where woodcutters came from and how they were located over a map of Britain.

Living in Castles tells of life in Orford Castle in Suffolk while the *Castle Guide* lets you explore and meet the people in 1322 at Chirk Castle. The information is based on actual account records left from that time and proved incredibly popular with teachers and students alike.

You can journey around the castle seeing the pictures today and watching the scene from 1322 be reconstructed on your request.

The last section is a database of castles in Britain. Again drawfiles can be dissected and you can take a variety of routes to the same point. There are 150 photos in the database from English Heritage, and Anglia see PhotoCD allowing them even more flexibility for their forthcoming products.

PRODUCT SPOTLIGHT

Product: Human Biology and Castle
Price: £40 each
Supplier: SCA (Anglia TV), PO Box 18, Benfleet, Essex SS7 1AZ.
Tel: 0268 755811

Clip-art

USING CD-Roms to store high resolution quality images, whether PD, commercial or Photo-CD, should use the data storage capabilities of disks to their limit.

The **Artworks ClipArt CD-rom** from Computer Concepts contains their own ArtWorks clip-art and fonts and 100 plus 24-bit sprites (which are also saved as uncompressed TIFF files).

Your machine must have an application which can access them. RISC OS 3.1 machines cannot load these files, as with the normal 1, 2, 4 and 8 bit per pixel sprites, as the operating system and current hardware don't support them – you'll need !ChangeFSI or !Translatr.

If you don't have ArtWorks or memory is limited !AWViewer is supplied so you can view the ArtWorks clip-art files. A very useful utility, !PortFolio is also on the disk to help you find and preview all the clip-art on the CD.

Portfolio produces thumbnail pictures, designed to look best in 256 colour modes. Under RISC OS 3 they appear in other modes, while RISC OS 2 users can only see them in 256 colour modes. The six buttons at the top of the window let you flick through the thumbnails which are sorted alphabetically. A field underneath gives the name of the file, its type and size.

In addition the field at the very bottom of the window tells you the name of the directory. There are sort facilities and all in all a useful way to access over 700 ArtWorks pictures.

Computer Concepts have taken the opportunity to add demos of Matt Black's clip-art libraries and some of their other products. You can access 16 bit, 44Khz samples to demonstrate the audio capabilities of the Wild Vision Lark and Eagle multi-media cards such as sound effects, voices and musical instruments from the Advanced Media Group in Farnham.

They can be played on a standard Archimedes using !AudioWorks, this is not recommended since the files are unnecessarily large. The DemoSample directory, alongside the !AudioWorks program on this disk, contains many of the more interesting samples converted into 8-bit format.

The Image Warehouse CD-rom we covered last year holds the same pictures in different modes and sizes.

● *Eesox's photographs can be saved as Sprite or Clear files*

Image Gallery holds the same pictures – photographs – on the same disk for different machines – Acorn, Amiga and IBM. So if friends or colleagues have access to these machines you can spread the cost.

All clip-art disks include thumbnail viewing software which is useful but an essential is a search facility and this is where Image Gallery and the ArtWorks CD-Roms benefit.

PRODUCT SPOTLIGHT

Product: ArtWorks ClipArt
Price: £19
Supplier: Computer Concepts, Gaddesden Place, Hemel Hempstead HP2 6EX.
Tel: 0442 63933

PRODUCT SPOTLIGHT

Product: Image Gallery
Price: £45
Supplier: Eesox, 5 Hillfield Road, Comberton, Cambs CB3 7DB.
Tel: 0223 264242

Summing up

Just over a year ago there was the first CD-rom Roundup in Acorn Computing. I think that this one will probably be the last. Not because the format is doomed but the contrary. As prices of hardware and software fall, the concentration on the encyclopaedia type of CD-rom and conversions from other formats will become less important.

The problem until now has been one of the chicken and the egg: Why should you buy a CD-rom if there is nothing to play on it, and how can producers bring down their costs for such a small market?

Are CD-Roms about to become as important to the computer user as a hard disk? Only time will tell, but with the explosion of CD-rom drives on the PC to produce multi-media-specific machines with drives built-in, it's only a matter of time before Acorn follows suit.

Revolution.
The new CD-ROM.
At only £299 + VAT
its pedigree may surprise you!

The Morley **Revolution** is the ultimate plug-in-and-go CD-ROM drive solution for Acorn 32bit computers.

This Revolutionary new system is the result of a unique Morley Electronics development, based around the latest CD-ROM drive from Sony. Developed specifically for the Acorn market, it is suitable for all Acorn 32bit desktop computers from the A3000 right up to the A540. There are no complicated setups or *commands. Merely plug in the interface and drive, switch on and you are ready to go. Simple and quick, the Morley **Revolution** offers an exciting solution for requirements in education, the home, industry and office environments. Current applications include encyclopaedias, dictionaries, newspapers, digitised video and sound, clip art and a host of other programs offering exciting learning possibilities that would not be feasible without CD-ROM.

The **Revolution** matches the capabilities of far more expensive drives. It is Replay, multisession and Kodak Photo CD compatible, operates via Acorn's CDFS and is compatible with existing hardware running RISC OS 3. It can also use all available RISC OS based CD-ROMs, as well as access DOS based discs and run them through emulation. It even plays audio CDs!

Contact us for more details about the Morley **Revolution** CD-ROM or place your order and join the **Revolution** now.

Sony is the registered trademark of the Sony Corporation of Japan.

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What are the fax?

Clem Vogler concludes his overview of comms with a look at fax technology

FAX is an abbreviation of *facsimile transmission* and is a method of sending a copy of a picture down a phone line. The picture may be partly or wholly text, but it is transmitted as a picture that's been scanned and converted to a bit image.

The current Group 3 fax standard, with which 95 per cent of fax machines comply, allows standard resolution of 200x100dpi (dots per inch) and fine resolution of 200x200 dpi.

The bit image is transmitted to the receiving fax machine which reconstructs the picture by scanning a print head back and forth across thermal paper, depositing dark or light dots corresponding to the received bit stream. Some more recent and expensive machines laser print to plain paper.

For sending some data, fax is less than ideal. You have to print the data out as hardcopy before you can feed it into the fax machine. At the receiver end it is printed as hardcopy again, which costs time, paper and ink, when you might rather hold the data in a computer file and print or not at your convenience.

By sending data as a bit image of the text encoding it, you send far more information than you would if you transmitted the data as ascii characters. Even though fax machines employ data compression, they send 10 or 20 times as much information as the data content requires. You pay for this profligacy through your phone bill. You also pay for scanning hardware at both ends of the transmission.

Things improve if you use a fax modem – a data modem having an additional capacity to send and receive faxes. Data is still transmitted uneconomically as a bit image, but you can prepare the outgoing fax at the keyboard and transmit it as a file without printing.

Acorn solutions

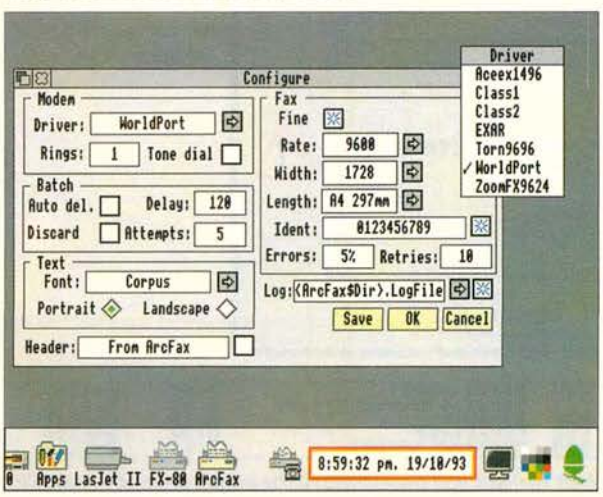
At the receiving end you can save the incoming fax as a file and display it on screen or print hardcopy if you wish. The limitation arises when you want to send graphic images. You either have to create them yourself or scan them into your micro using a scanner and associated software. Once they exist in your machine as a graphics or TIFF files they can be faxed at will.

RISC OS users who want to use their micro to send and receive faxes can choose between two systems: The FaxPack from Computer Concepts and ArcFax from David Pilling. This is a more radical choice than between, say, two paint packages.

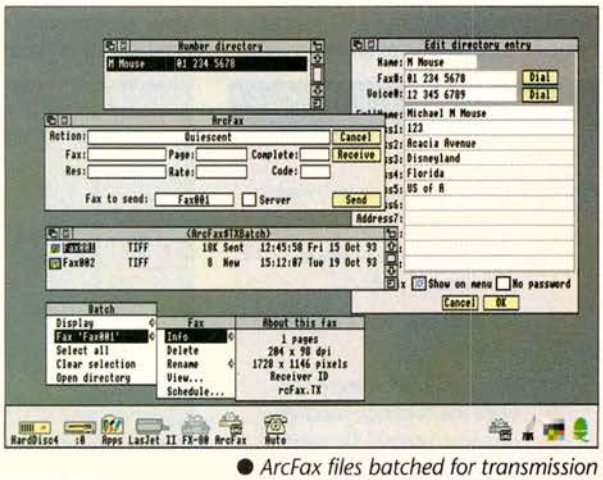
FaxPack is a fax-modem on a half-width hardware card which you slot into the back of your machine. Software to run the card is provided and apart from standard faxing, you can use it for direct data and file transfer if the other end has a FaxPack too.

FaxPack doesn't use the serial port but a lead from the FaxPack card is provided for direct connection to the phone socket – a phone line splitter is also supplied.

ArcFax is a software package for use with a separate fax modem. Naturally, ArcFax is much cheaper than FaxPack but you do need the modem too. With ArcFax you communicate with your modem over the serial port, or high speed ➤



● *ArcFax's configuration screen*



● *ArcFax files batched for transmission to a directory destination*

serial card, if one is fitted.

Both packages can receive faxes but your computer has to be switched on. For automatic fax reception, your modem software has to be switched to auto-answer – all right if you have a dedicated fax line, but inconvenient if your fax and voice traffic share the same line.

FaxPack has an answering machine option which makes a neat job of discriminating incoming faxes from voice messages, greeting the latter with a prerecorded, digitised message then digitising and storing the answer as an Armadeus format sound file. The sound quality is good and, being digital, won't degrade with frequent use as happens on conventional tape cassette answering machines.

```
;----------------------------------------

  Fax Sent on Mon,18 Oct 1993 at 20:57:33
  Sent to Manual Dial
  Fine resolution at 9600 baud
  Number of pages, 1
  Error on page 1, Fax aborted by request
  Fax ended at 20:59:09

;----------------------------------------

  Fax Sent on Mon,18 Oct 1993 at 23:21:53
  Sent to 0532333420
  Standard resolution at 9600 baud
  Number of pages, 1
  Fax ended at 23:23:14

;----------------------------------------

  Fax Sent on Mon,18 Oct 1993 at 23:23:49
  Sent to 0532198340
  Standard resolution at 9600 baud
  Number of pages, 3
  Fax ended at 23:26:08
```

● *FaxPack's transmission log*

There is no facility for replaying messages remotely over a phone line. The answering machine feature won't work properly if you have a VIDC enhancer in your machine as the resulting sound channel speed upgrade makes Paul Robeson sound like Mickey Mouse.

Use and usability

Installing FaxPack is the now familiar routine of adding a podule. A flying ribbon cable makes an additional connection to the main board on A300, A400, A540 and A5000 machines to route phone sound through the micro's sound channel, and software allows you to switch sound on or off, or most usefully, to hear just the preliminary dialling and connecting. But this feature can't be used on A3000 machines which lack the main board connector.

```
ADFS::HardDisc4.$.!ArcFax.LogFile *
12:17pm 15th October 1993 : Dialled 0123 674879
12:46pm 15th October 1993 : Receiving fax id:        0232  111331
12:57pm 15th October 1993 : Fax Fax001 sent
```

● *ArcFax log's your work for future reference*

Tone and pulse dialling are both catered for, as are Mercury and dial prefixes – like the 9 you use on an office internal exchange to get an outside line. Fax headers and footers can be included to identify the source and destination. Transmission and receive logs record dates, times, phone numbers and transmission rates.

You can also specify the number of line and page errors you are prepared to tolerate before your software sends a re-transmit request. FaxPack tries to transmit at 9600bps, but will fall back to a lower speed if poor line conditions warrant it. You can optionally enforce a lower link rate.

While fax transmission is taking place, FaxPack is rather reticent about how things are progressing. On a manual fax machine you have the reassuring sight of paper disappearing into and emerging from the machine.

FaxPack expects you to trust it to know best and undertakes to let you know if anything is amiss. I preferred ArcFax's arrangement of a flashing icon and a percentage sent indicator.

FaxPack has a printer driver called !PrinterFP. You send a fax by printing it to !PrinterFP as you would use a normal printer: You either drop a suitable file on to the PrinterFP icon or you send it from your word processor or similar application's print menu. If you have RISC OS 3 and try to send a document produced by Impression, you get a warning. In the bad old days of RISC OS 2, you could only have one printer driver resident on the icon bar. Such is the case with !PrinterFP.

This contrasts unfavourably with ArcFax whose RISC OS 3 driver sits happily on the iconbar with your regular printers. Worse is to come.

Irritatingly you have to reboot your machine if you want to go from normal printers to FaxPack and vice versa. Though a correction sheet to the handbook explains how you can modify your !Printers Run file to reawaken the module. Computer Concepts plan to release a RISC OS 3 version of !PrinterFP in due course but other products have taken precedence.

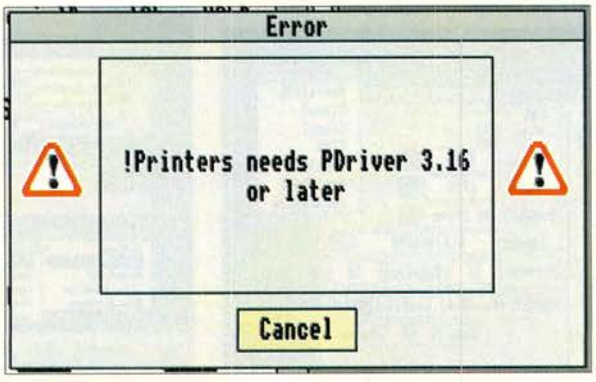
A virtue of FaxPack is that it is easy to use. As there is no separate modem you aren't forced to choose between giving control to the modem or to the software. Also, there is no terminal emulation to worry about. The disadvantages depend on what you're comparing it to.

A dedicated fax machine lets you send original documents without scanning them into your micro first, and compared to a separate fax-modem you miss out on accessing bulletin boards and transferring files from conventional modems.

But on the other hand you can compose letters and any other type of document on your machine then send it straight down the line with optimum quality since no scanning

FaxPack versus ArcFax

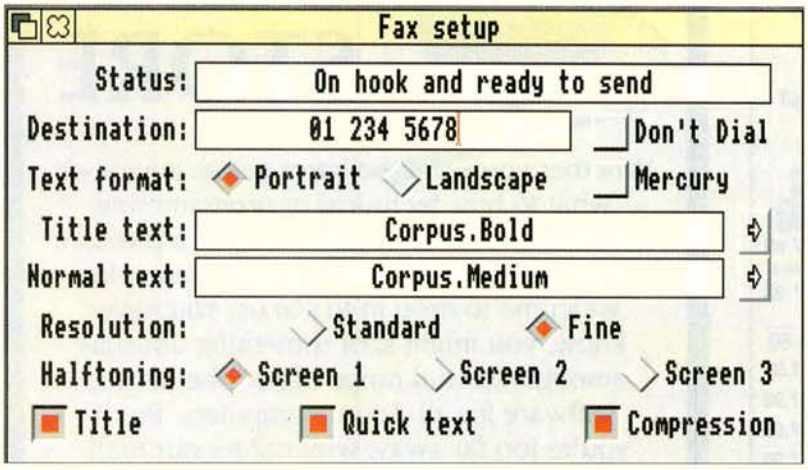
FaxPack	ArcFax
Doesn't need a separate fax modem	Needs a separate fax modem
Occupies a podule slot	Uses the internal or high speed serial port
Answerphone facility	No answerphone facility at present
Can transfer data files to other FaxPacks fast	Using suitable comms software the separate modem provides normal file transfer facilities
RISC OS 2 printer driver can't co-exist on icon bar with your usual printer	RISC OS 3 printer driver coexists on icon bar with your usual printer



● *When you try to reinstall your regular printers...*

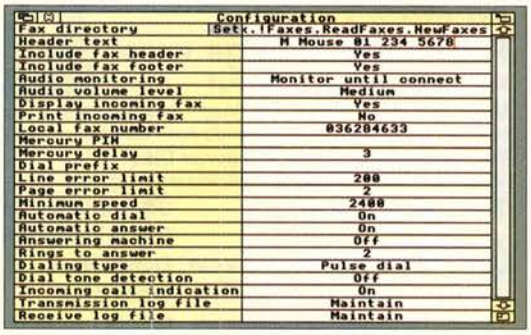
```
48 System ROM  PaletteUtil              0.45   Active
49 System ROM  ParallelDeviceDriver     0.34   Active
50 System ROM  PDriver                  3.18   Dormant
51 System ROM  PDriverDP                3.28   Active
52 System ROM  PDumperSupport           0.11   Active
```

● *...you find that FaxPack had anaesthetised the printer driver rom module*



● *FaxPack is ready for you to send your masterpiece*

● *If you have RISC OS 3 and try to send a document produced by Impression, you get this warning*



is required *and*, uniquely, it has the direct file transfer capability which is much faster than email. ArcFax also gave me some teething troubles.

I spent a certain amount of time trying to configure it to the high speed serial port. There is no menu option for this, though there is the necessary information in a ReadMe file. The more serious problem was that my modem wasn't supported by any of ArcFax's range of modem drivers.

This is a difficulty that doesn't arise with FaxPack, as there are no external modems to drive. I phoned ArcFax's customer support and they groaned when I told them what modem I was using and how much trouble they'd had getting ArcFax to work with that one. They then wrote a new modem driver for me and everything worked perfectly.

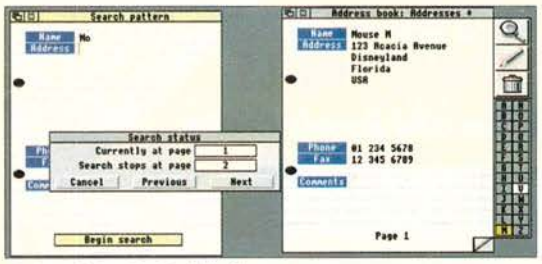
The drivers currently supplied are Class1, Class2, Aceex1496, EXAR, Torn9696, WorldPort, XoomFX9624. Class1 and Class2 drivers are generic types and don't necessarily support every Class1 and Class2 fax-modem. Worldport, on the other hand, proved ideal for my US Robotics Courier.

The best advice must be to check that your present or intended fax modem is suitably supported before buying ArcFax.

ArcFax also selects the optimum link rate compatible with the quality of your phone line. Files are batched for transmission either immediately or later when off peak phone rates apply. The same fax can be scheduled for transmission to several recipients.

Received files are also batched and are not displayed automatically so you have to check the batch directory. Versions from 1.10 will open the batch directory to show that a new fax has arrived.

Hardcopy printouts are of similar quality to that from a conventional fax machine. If you get your hardcopy from an inkjet or laser printer it will look like output from a plain paper fax – not as good as normal 300dpi laser print because of the inferior resolution.



● *Searching FaxPack's directory*

If you are content to view received faxes on screen you'll be relieved to hear that there is a rotate option to save you having to stand on your head when the sender puts the original into his machine upside down.

As with FaxPack, you send a fax by directing its contents to a printer driver, though in this case both RISC OS 2 and RISC OS 3 drivers are supplied. Both FaxPack and ArcFax supply a dialler directory for you to record and autodial commonly used numbers.

ArcFax users who need more than one set of start-up configure options can write their own autorun scripts if they master ArcTerm's script language. They can also write or edit modem drivers.

The script language is based on C and appears to be much the same as that used by Hearsay and ArcTerm7. It is documented in the handbook, but most people will not need to get involved.

Supplies and suppliers

Product: FaxPack
Price: £299
Supplier: Computer Concepts, Gaddesden Place, Hemel Hempstead, Herts HP2 6EX.
Tel: 0442 63933

Product: ArcFax
Price: £23.96 (inc VAT)
Supplier: David Pilling, PO Box22, Thornton Cleveleys, Blackpool FY5 1LR.
Tel: 0253 852806

Summing up

At £299, FaxPack is not going to appeal to everyone. It does provide an effective solution if you currently have neither a fax machine nor a fax-modem and either do not need to communicate with bulletin boards and other modem users or have a (non) fax-modem already for these purposes.

Unlike a conventional fax machine, you can only fax documents you create at the keyboard or can load as files. You can't fax original documents unless you have facilities to scan them. The answering machine and direct transfer features are a bonus.

ArcFax comes at the ludicrously low price of £23.96. At this price it represents very good value, provided it's compatible with your fax-modem. If it isn't, David Pilling will refund the purchase price. If you haven't got a fax-modem he'll advise on suitable ones. Future versions of ArcFax will have an answerphone facility too.

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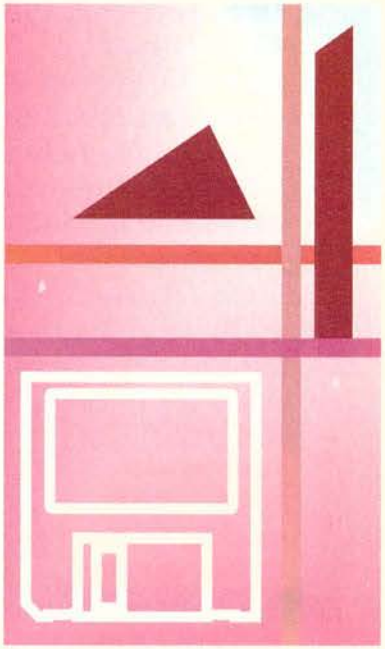
Fast transformations

Michael Rozdoba presents his patent hangover cure



FEELING fragile after the Christmas and New Year celebrations? Well pull yourself together. How do you expect to feel after behaving like that? Want to know what my cure is?

I lied – there isn't one. So enjoy your suffering, or you could try making penance by reading this wonderfully informative and helpful column, and then writing in with your own hints, tips and problems.

Assembler shorts

First, an old favourite which most will have come across before. Need to swap the contents of two registers in three instructions and without an extra register spare for the transfer? Here's the solution:

```
EOR r0, r0, r1
EOR r1, r0, r1
EOR r0, r0, r1
```

That may be old hat – and here's the teaser, does it work in all cases? But have you ever come across this nifty way of reversing the byte order in a word? These four instructions reverse the byte order in r0, using r1 as scratch:

```
EOR r1, r0, r0, ROR #16
BIC r1, r1, #&FF0000
MOV r0, r0, ROR #8
EOR r0, r0, r1, LSR #8
```

This one comes courtesy of Acorn's Roger Wilson. I had a shot at solving this problem myself and ended up with an equivalent method. Can you do better, or prove that this is the quickest way?

Wimp icon update

If you need to alter the content of a text icon frequently, say when tracking the pointer's location and displaying its coordinates in a pair of icons, you may notice that the icon's border flickers during the redraw. The problem is especially noticeable if the icon has a 3D border, as that takes longer to draw.

It can occur if you use *Wimp_SetIconState* to force an update of the icon after altering its text content. Although the Wimp doesn't normally erase icons before replotting them, in the case of a text icon at least part must be erased to remove the old text. In fact, the whole icon appears to be erased and this causes the border to flicker during a rapid sequence of redraws.

There is a simple method you can use to avoid this and although this may seem a small point, it can have a considerable impact on the apparent slickness of your application.

The answer is to abandon use of *Wimp_SetIconState* to force an update. Instead, call *Wimp_ForceRedraw* with a rectangle based on the icon bounding box. This can be read using *Wimp_GetIconState*.

However, before doing the force redraw, shrink the box inwards by the width of its border. So if it has a 3D border of type r2, add four to *x0* and *y0*, and subtract four from *x1* and *y1*.

Of templates and tool sprites

If you use a new set of tool sprites, such as the very nice 3D ones from Acorn, showcased in their NewLook application, you should be aware of the following facts:

These can seriously damage your health while trying to make fine adjustments to window template sizes. If you are trying to make a pixel precise alteration to a window size, such as its width and this involves the width of a scroll bar say, you are in for trouble.

This is because the scroll bar widths depend on the size of the tool sprites and there are several subsets of tool sprites each used in different modes, such as 12 and 27. If these haven't been defined to exactly the same sizes – the ones in my copy of NewLook haven't – the size of window furniture will vary between modes like 12 and 27.

This can make precise design of window templates awkward. As a result, it's probably best to perform such actions after removing any ram-based tool sprites.

I discovered this myself while trying to set an initial window width to match that of a tool pane below. The window had a vertical scroll bar, whereas the pane didn't. Having set them equal I later found that when the mode was changed, a misalignment occurred, which I traced to the fact that the scroll bar width had altered.

More mouldy Acorns

Methinks, I have found another strange bug in Paint: If an application attempts a ram transfer of a palette to a sprite held in Paint, even if the ram transfer is successful, Paint insists on following it with a file transfer.

What actually occurs depends on how the sender reacts to this. If you are such an application and use Acorn's C RISC_OSLib functions, take particular care when using the *xfersend* functions directly, rather than via *saveas*.

For instance, if you use *xfersend_pipe*, you should call *xfersend_clear_unknowns* **immediately** after the transfer. This ensures the unnecessary file transfer is ignored and so never occurs.

Stop me, buy one!

Don't forget, 42 may be the answer, but we have yet to discover the questions. If you have a question, it is your duty to society to write in, so do it NOW.

To: TechForum,
Acorn Computing,
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Replies

Several of you have now written with some interesting problems and solutions which will be up and coming in the next few issues and on the subscription disk from February 1994.

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Lies, damn lies and statistics

Terry Blunt takes a look at Clares' new data presentation package

WHILE many aspects of computing are well covered on the Acorn 32-bit machines there's one area that has been decidedly thin so far and that's visual presentation of raw data. Clares have zeroed in on this, filling the gap with their new application, Plot.

Plot allows you to take any data set and turn it into a meaningful display. The common formats available are, Cartesian, Polar, Histograms and Pie charts. This is not the whole story though as Plot also supports the less common Ternary, surface, 3D Cartesian and cylindrical or spherical polar types.

Plot installs on the iconbar in the usual way from any media but when you use it for the very first time you are asked for your name and address. This will be embedded in the program, and is the most inoffensive form of copy protection.

The manual gives detailed instructions for installation with both RISC OS 2 and 3. I was surprised to find that Plot is quite a memory-hungry beast. It takes up close to 600k of memory, which is likely to cause problems on 1Mb machines.

Data entry

At its most basic level Plot allows you enter data either as a formula or as a set of X,Y and Z coordinates, where relevant. The latter method is rather tedious but still a vast improvement on the arcane method of direct – much corrected and smudged – plotting on graph paper I remember so well.

Each graph type can be displayed in a variety of styles. Histograms, for instance, can be normal flat bars, 3D bars, stacked vertically, rotated or any combination of these.

Cartesian diagrams can be shown as point to point straight lines, scatter dots or best fit lines and curves. You have full control of scaling, axis and background grids. Both linear and Log grids are supported.

A problem occurs when you want to enter data that follows a logarithmic pattern. While it is possible to enter data normally then use the transform option to change the values so that they are logarithmic, what I really wanted was a feature that would maintain the data values but space them logarithmically across the graph.

Experimental data often has a known margin of error. This is catered for in Plot by the provision of error bars giving you maximum and minimum possible error extent. Similarly Plot can either ignore missing values or interpolate them from the values either side of the missing data.

Changing types

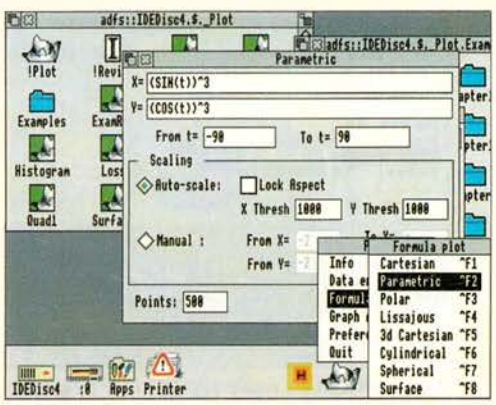
A useful feature is the ability to enter data for, say, a Cartesian graph and try it out as a histogram or a pie chart to see which type looks most attractive and informative. You can also build up composite graphs of related data using the Merge graphs feature.

These two features combined allow you to show different trends in statistical data very easily. Such trends are often more important than the discrete data points.

Plot is fully RISC OS compliant with menus and dialogues forming a sensible easy-to-follow pattern. All of the dialogue boxes have default values in every field, so it should be impossible to crash the program by just browsing at random.

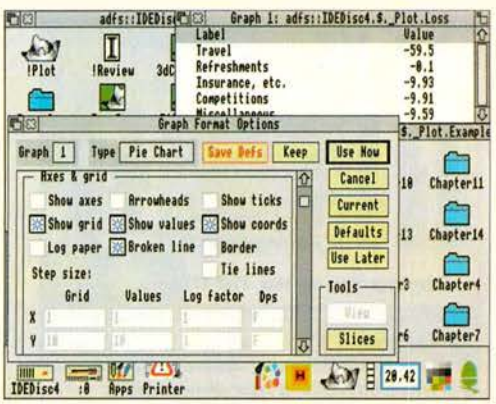
I often like to do this to find out how easy it is to use a program without reference to the manual. Plot performs fairly well in this respect. There are key short-cuts for most operations and interactive help support. However, this

➤



● *Graphs can be generated from any formula*

● *Just one page of the many format options*



PRODUCT SPOTLIGHT

Product: Plot
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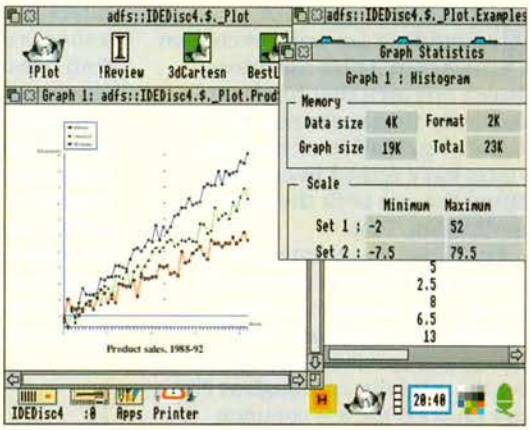


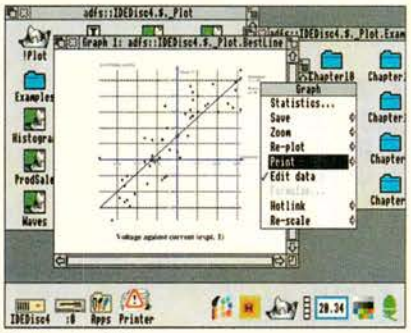
● *Merging graphs for easy comparisons*

➤

doesn't include the new RISC OS 3 menu help.

Plot saves your work in its own format, storing everything about the chart in one file including associated text and other information such as type of display, scaling, data type and format. This means you can reload and display the graph exactly as it was created.

Plot can also import and export CSV, TSV and SID files. This adds great flexibility allowing you to generate the data in say, a spreadsheet and import it for display. Plot will also create drawfiles so you can export to a frame of a DTP package and combine your charts with supporting documentation.



● *The best line is impossible to see without Plot's help*

Additional interfacing will be available when Acorn finalise their Hotlink protocol. Plot is already geared up for this and will then be able work seamlessly with other packages.

Text associated with your graphs can be in any font style. Titles, axis labels and values can all be quite different and in different colours too. In fact, Plot has extensive colour control. This shows to its greatest advantage when displaying histograms or pie charts.

Nevertheless, I would like to see an option for different monochrome hatching patterns, as printers can be quite indifferent when handling grey levels.

The background itself can be a filled colour and with a drop shadow. If you find your chart needs livening up a bit more you can drop in a drawfile as a background, or maybe you'd prefer a histogram showing oil revenue to display the columns as a stack of barrels.

Data manipulation

As well as the actual presentation Plot can perform considerable data manipulation, enabling you to condition your raw data to a more effective form for display. As well as simple re-scaling or offsetting other transformations available are Reduction to linear form, Swap X,Y and conversion of histogram data to frequency form.

The tutorial is easy to follow and along with the numerous examples – files of which are provided on disk – takes you right through all Plot's features from simple Cartesian graphs familiar to any first level Geometry student through to somewhat esoteric 3D spherical polar displays.

Unfortunately, this style doesn't work so well as a reference manual for the experienced user who wants to quickly target one facet of its use.

I have very few niggles apart from the difficulty with Log graphs. I did find that redraw speed was occasionally disappointing and it is annoyingly easy to produce a screenful of separate graphs when all I really want to do is to update the existing one.

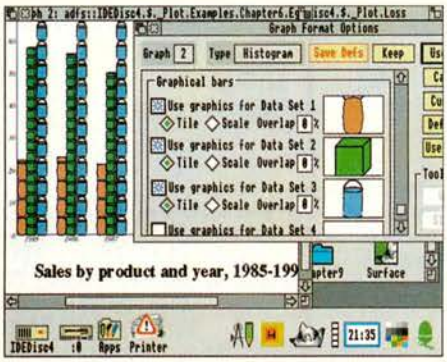
The re-plot options dialogue is quite daunting. It is so big that Clares have decided to have a menu dedicated to just viewing a selected part as well as the more normal scrolling.

I wonder if it wouldn't have been better to consign some of the less used features to a separate dialogue box, although you then have the problem of deciding which are the least important functions.

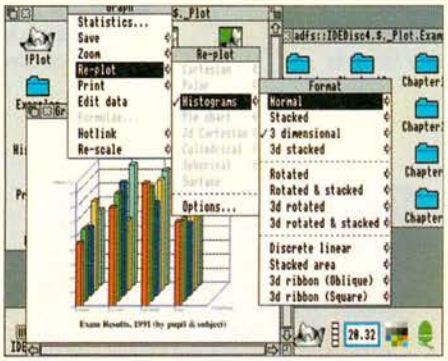
Summing up

Plot is very clearly aimed primarily at the education market and will be of interest to a wide range of specialties right through almost all engineering subjects or, following the social sciences I would expect to find it equally at home presenting statistical data on say, unemployment and crime in an attractive, digestible form.

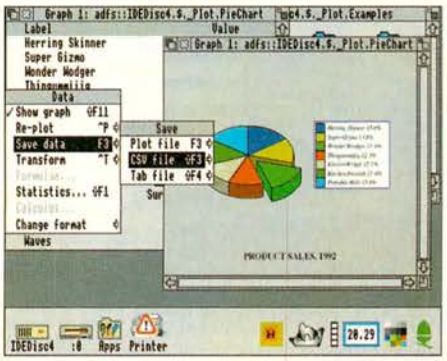
Whether you want on-screen presentation or hard copy Plot should fulfil most of your requirements.



● *A more interesting type of histogram*



● *3D histograms look better than flat ones*



● *Sectors can be easily exploded for emphasis*

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Warped in

I LEFT frustrated fishers at the computer terminal in Dr. Roach's laboratory last time and I think I ought to issue a caveat – Hatters may tell the truth, but it's not always the whole truth – you should spend some time at the terminal, exploring more possibilities than I indicated, in order to gain an additional clue as to the identity of the chubby-faced little villain who is trying to undermine your endeavours. Anyway, enough of that.

Get to your feet and don't forget that the door closed upon you, so that you need to put your id card in the slot before you can leave. Three moves west take you to the foyer once more. From here you must do some unlikely things to make a little theft easy.

Another move west will take you into the quadrangle – and the restaurant is one move south from here. In you go, and try to order a meal with your fisa card.

The supercilious waiter will wave you away while, at the same time, offering a takeaway sachet of plankton. This is what you really need, so buy the plankton with your fisa. Now you must go out of the restaurant, west to the station to catch another underground train.

After you have boarded the train, wait until you get to Museum before leaving. Go out of the station and then north into the Museum. While there is nothing to stop you looking around, the place you really need to get into is the alarm room to the north which is painted white – a colour you don't enjoy: You've always despised whiting.

Opening the sachet of plankton will reveal the alarm system's beams of light and enable you to go safely north into the crystal room where the prized exhibit – and one of your vital ingredients – is located.

Grab the crystal then return to the station and wait there for a train. Your destination – Paddlington – is close at hand. Disembark there and move out twice then west and north to take you to the lobby of Dr. Roach's apartment building. Things should start to look familiar now.

One move up takes you to the landing outside Dr. Roach's apartment and, as it happens, outside that of your new neighbour, Ernest Chubb. What's more, there's a radio case here: Remember that from last time? Grab it quick and bustle into the apartment.

I have some bad news and some bad news. The bad news is that you have been burgled and the bad news is that something called a dark warp faces you. Drop everything while I try and explain.

There is, as far as I can see, no single solution to the dark warp: All I can try and do is explain the general principles that lie behind it. It's a maze, only it isn't – and it can't be mapped like a maze, either.

Also it's randomly generated, so the moves I am going to give here probably won't be the moves you will have to take. Apart from that, once you've grasped the basic idea, it's quite simple. I'm not the Mad Hatter for nothing.

Save your position, once you have dropped everything, and enter the Dark Warp. You will be told that you are lost in The Dimensions but that exits are clearly visible: They are trying to lure you into thinking it's a maze. It ain't.

You need an odd number of exits to succeed: So count them. In this example, I had an even number: N, NE, E, SE, S and W. That's a worst-case scenario. Normally, if there are an even number, one of them is up and that's what you should choose. In my case up was out – if you see what I mean – and so I chose N.

That led to the following choice: SE, S, SW and Up, so up I duly went, to find that I could now go N, NE, E, SW and W. Next I went NE, after which I could go SW, W and up and so I now went SW. Are you getting the picture?

You must eliminate *ALL* diagonal directions first before you can begin to tackle the horizontal or vertical ones. Eventually you'll be left with one exit – up – and you'll be told that there is a cylinder present: Grab it and scarper up.

So: Here's the drill. You must have an *odd* number of exits to start. If not, move up if you can, or else take the first available exit and *then* move up. After that, pick off the diagonal exits one by one and then the other ones in turn. Finally you are left with the cylinder and up as the only option.

More next time.

We are still Elite

I have had a moan from Chris Casson. The essentials are this: He can't hack into ArcElite in the way he could when he had a BBC+. He also wants to know how to get 25.5 units of hyperspace fuel.

It ain't my province to provide hacking facilities: What I **do** provide is a freebie Docking Computer and – now the competition is over – I will have extra fuel (fancy a hundred thousand light-years?) and a little cash (ten million credits) as well as a reasonably equipped spaceship to offer.

You will be based at Diquer and

space

well able to start your career, even though you are harmless. These goodies come courtesy of Clive Gringras, which means they are dead kosher, real and honest, only available from *Acorn Computing*, and can be obtained by sending a £800 cheque ... sorry an 800k formatted Acorn disk to this column together with return postage.

I have had an interesting letter from Jamie Nicol who lives in Callington, Cornwall. He is lost in **Wonderland** (hang about, lad, a solution will be serialised after Fish!) but also has some interesting comments about the first two Missions in ArcElite.

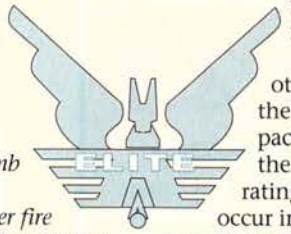
Many of you now know that Mission 1 involves saving a starving planet by dropping a Genesis Capsule dead on Spock at Xeann, thus giving it a glimmer of hope.

What is more interesting – and is something I hadn't thought of – was his comments concerning the triggering of Mission 2. He was Fugitive at the time, and wonders if you have to be slightly on the wrong side of the law before you get the message asking you to assassinate Zartid. Personally, I can't remember my own status, though I doubt it was worse than Offender.

Jamie gives an account of his tactics which might prove helpful. *Zartid had a Mamba security patrol so I detonated my energy bomb and locked a missile on to him. He had all round laser fire so wherever I went he fired at me. My shields quickly depleted but I worked out a plan. Try to come at him from the bottom at full speed. When you are just about to crash launch a missile and quickly pull up. Then just keep firing until he's destroyed. I actually launched two missiles but this was a case of overkill.*

As it happens, Jamie's tactics were similar to my own: Zartid is a mean beastie. Advice to those on the point of despair is simply: Nil desperandum, nil carborundum and keep at it. As with all the Missions on ArcElite, they can be done even though they may not be easy.

Michael Barnes has written most restrainedly: He only asks the questions he considers most vexatious. His first covers our old friends the Space Beacons, which he describes as *objects which appear blue on the scanner (as does cargo), but are unmoving and hold a strict formation, usually a quadrilateral or triangle. I have picked up several in the past, although they do not register as cargo, but they take up space in the hold. The only way I have found of getting rid of these invariably means losing the ship with them (Escape, for example). What are these and what are they for?*



Space Beacons are like very attractive members of the opposite sex: There to be admired, but beware of interfering. Apart from using Escape, you can jettison a Space Beacon every time you jettison a cargo cannister. Best not to pick them up in the first place.

Michael had three other questions: What do the numbers on the packaging box indicate after the legal status and combat rating, do Generation ships occur in ArcElite, and are there any other Missions after dealing with Z Pino. Answers are as follows: In the prototype game, the numbers indicated your status, but were deleted in the final product, I haven't yet seen a Generation ship, wait and see.

George Ombo is the proud owner of an A3000 and also of ArcElite. He has a few queries that crop up from time to time and are thus well worth dealing with. The first has to do with cheats: I have not published any ArcElite cheat in this column yet – not sure I ever will – but I have made the offer of helps provided by Clive available.

The pause button is F12, which returns you to the desktop: There is no way of forcing yourself into Witchspace on ArcElite, that I know of, in spite of what other – less well-informed, perhaps – magazines may say.

Finally, triggering Mission 1, and how it's done is raised by George. He asks if it is triggered in the same way in ArcElite as in Elite: The answer is, no. In Elite, Mission 1 (there are only two) is triggered as you receive your first *Right on Commander* message. In ArcElite you must be in Santaari Galaxy, have a fair amount of cash (try Cr50,000) and have belted a few baddies to boot. ArcElite has more than two Missions. See you next time.

In times to come

My letters file has accumulated a fair number of queries from readers stuck in various parts of another Magnetic Scrolls adventure, **The Pawn**. This time I shall just set out the background scenario for two reasons: I've needed more space than usual for the current episode of the Fish! solution, and I've still got a bulging postbag where Elite in its many guises is concerned.

If you can lay hands on it, The Pawn is well worth adding to your collection, though I haven't seen it advertised for sale recently. Anyway, here's the background.

The magical kingdom of Kerovnia is in trouble: It's drifting up wossname creek and nary a sign of a paddle, it is in a mess until you are invited to tie up alongside. The beloved Queen Jendah II has been assassinated, the Rubikyoub dwarves are under suspicion and have had their citizenship revoked.

King Erik is indecisive, save in his resolve not to absolve the dwarves (who just happen to produce the finest malt whisky known to Kerovnia) and – to make matters worse – a general election is in the offing. John Major never felt like this.

You are on the way home from your weekly visit to the supermarket when you encounter a stranger in a white overcoat, wearing a thick, bushy beard and glasses – not necessarily in that order. You hear a sinister laugh and – a thump on the head later – you wake up to the singing of birds and find you are wearing a thick silver wristband and a bemused expression.

You are on a gravel path leading north to two snow capped mountains. To the west is a dying forest. Eastward is a vast, grassy plain and the path also continues southward. Honestly, with text like that, who needs graphics – and yet – The Pawn has those as well.

The preliminary hints are simply these: It is possible to interact with and interrogate certain characters and, as is so often the case in adventures, there are some things which need careful examination if all is to be revealed. Next time, we'll start our explorations in earnest.

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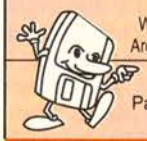

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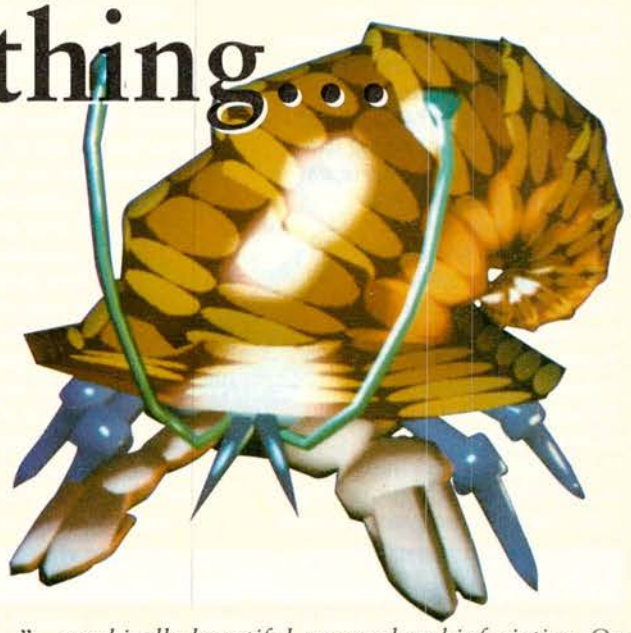

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Play it Again Sam 3

...bells are a ringing

● *Whoops, I think I missed the green*

CHRISTMAS eh, well it's over for another year. Actually in the shops around here it starts in September and finishes in January. At what other time can you possibly get a ropy old collection of *ancient and modern* games from a well meaning member of your family. Apart from birthdays anyway.

The content of this effort from Superior Software covers quite a range of game playing styles – everything from platform to puzzle games. For the record the titles on offer are Letrouve, Superior Golf, Top Banana and Zelanites.

Right, now if you've got a sharp eye and an encyclopaedic knowledge of such things you'll realise that **Letrouve** hasn't in fact been released before. Yes it is indeed an original game. Mind you, having played it, the best place for it is in a compilation because this isn't much beyond PD standard.

A wall shaped array of coloured bricks lies across the screen. A timer, set initially to 20 seconds, starts ticking down and the computer asks you to find a specific colour sequence within a box shape. To help, what's currently underneath the box you're moving around is shown almost alongside the target sequence. Good job really otherwise it would be impossible.

The first few games consist of staring at the screen, listening to the clock run out and then feeling foolish when the position of the sequence is revealed. However, soon enough you can be racing along, making levels of 10 or 12 seconds with time to spare. Make a mess and there's a last chance bonus screen, unfortunately minus timer. All I know was I blew it.

And that's it. While mildly entertaining there's no real compulsion to have another go. So much for originality then.

PRODUCT SPOTLIGHT

Price: £24.95 (inc VAT)
Supplier: Superior Software,
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Next up is **Superior Golf**, complete with course designer so that when you've tired of the built in efforts you can make your own. This is a good idea in itself but it doesn't compensate for the fact that the game is merely routine and the graphics are basic.

If you like golf you could amuse yourself for some time with it, but then if you've got more sense you'll buy a better quality golf game rather than Play it Again Sam 3 in the first place.

On to the only real star performer of the package, and even this is an acquired taste. **Top Banana** offers high quality platform action with some funky tunes and graphics that are best described as psychedelic. Ranging from being bizarrely attractive, some of the levels in this game bring back memories of alcoholic over-indulgence.

There are not very many levels in Top Banana, but they are quite long and reasonably tough towards the end. As I said, if you really like platform games then this makes the entire package a worthy purchase, unless you've already got it of course.

In contrast to the Banana game, **Zelanites** has loads of levels, perfectly fine graphics for a space-based shoot 'em up, and yet has virtually no gameplay. What can you really say about this sorry effort.

It originally came in an oversized box to kid you that it was an action-packed violence extravaganza, and in reality it consists of moving your spaceship around the bottom of the screen, firing off missiles and dodging bombs.

Oh sure, if you don't have a life you can plough through the turgid gameplay and collect extra weapons, but personally this goes on the blank disk pile straight away.

Well, there you have it. One decent, if strange, platformer and a pile of soggy fillers. Shame really, as the other 32-bit Sams have been much better.

Duncan Evans

● *Weird, wonderful and very very green*

● *Find the right tile in the time*

● *If it doesn't move, shoot it til it moves, then destroy it*

Asylum

...Freudian arcade adventure

A NEW company and a new game from Andrew Southgate. A must for any student of psychology? Well, not really though they might make more of the jokes.

Simply, a schoolboy complete in uniform and cap going under the name of Sigmund is having a few problems. So would you if you discovered rogue cells in your brain. But being a clever little trick cyclist he knows that he has to shut them down. I wonder what Jung would make of all this?

So much for the plot. Basically this is a very nicely written and constructed arcade adventure. It works from hard disk or floppy and there are speed tweeks for those of you with faster machines. Control is via joystick or keyboard with instructions and customisation kept succinct.

There are three *worlds* the Ego, Psyche and Id. You can only enter the third when you have secured the first and these worlds are *big*. Find the Asylum icon and you've discovered one of the eight areas in each level which needs to be cleaned out and shut down.

This means you collect all the bits and pieces to up your high score – cups, cassettes, boots, fruit, candles and so on. Destroy rampaging rats, manic potted pots and booby-trapped platforms, taking as many sips as possible from champagne glasses of energy replacement or funny-looking flasks to survive.

In addition you'll find some stars and then you're into a bonus block where you must collect everything going. I mentioned destruction? Yes there are rocket launchers, bazookers and, my favourite, a gun which fires in five directions (forward) at once. I'd always opt for this rather than the launchers which aren't so good for getting rid of individual grenades.

The size of these levels is huge and as there is no time limit you can play forever – energy level permitting. As you approach , rogue brain cell arrows appear showing you the way. Useful but access is rarely direct.

Then there are the lifts in the form of elegant tables or large teacups, while Psyche boasts teleporters too, but there is a knack to using these, the secret may be in their colour.

Try out anything and everything because on one occasion I jumped up and down in a fit of frustration and the floor disintegrated beneath me giving me access to a hitherto closed area.

If stamping your foot doesn't work try blasting – very satisfactory. Also if you stand on some ledges they expand as you walk along them. But be careful as someone has taped dynamite to some of the tables.

Finding new little tricks gives Asylum's good graphics and music the most important edge – gameplay. Playing is something of a marathon as there is no save position facility and loathe as I am to map anything, it will help so, go and buy some graph paper.

I wasn't too sure whether I actually liked Asylum or not when I first started playing but it rapidly grew on me. It may not have the polish of a game like Magic Pockets but I think it has a wider appeal. Asylum is unusual and I'm off to have just one more go.

Teri Paul

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● *Lots and lots of goodies, but that lifting table will only give you one ride*

● *Be a little judicious in what you pick up*

● *First things first – get that gun*

The Exotic Adventures of Sylvia Lane

...fun and frantic

THERE are two ways of looking at this offering: Behind the times or fashionably out-moded. I prefer the latter as, while E.A.S.L. is graphically unimpressive, it has a certain fun aspect that many games fail to capture.

You control a politically correct secret agent who must secure pieces of a map in order to find the location of a kidnapped professor. You somersault your way through the Aztec temples of the Andes, leap around construction sites in New York and fight within Houston Space Centre.

These scenes *can* be attempted in any order and contain five separate levels each, although as mission one is considerably easier than the third I would recommend attempting them in numerical order.

Once into the game, Sylvia can run, roll, jump, kick and punch in almost endless variety to allow you to kill varied enemies such as rats, piledrivers and spiders. Anything killed produces a merry tune as well as a cartoon, Batman-like, *pow*.

Keys can be collected which open doors to reach many hidden map segments and other goodies. Small, of ten bouncing, *widgets* can be pushed around to help reach desired targets. These reveal blocks or planks that can be carried and used to reach far away ladders and levels.

Some cunning thinking is often required to complete the devious puzzles set on the later levels, and widgets have to be carefully guided to hit the right target. As well as this, Sylvia must be cautiously – or not, as the case may be – guided around foes that will deplete her nine lives all too readily. Beware, as many enemies will require more than one hit before they collapse.

If you thought all that was enough, there is also a time limit, but for once it is more than generous. As you can imagine, all this chaos leads to a lot of fun in a game that can't be taken too seriously. If at any time you get really stuck on a problem, you can quit the game and watch the computer show you how it should all be done.

The levels themselves are well graded and a welcome relief from many games that are either too easy or impossible to start, let alone complete. Most people should be able to complete the first couple of levels during the first session, although many of the later puzzles require more thinking than keyboard bashing.

Quite a lot of "the objects that cannot be picked up are in the background. These can often be distinguished by the impressive parallax scrolling that operates throughout. If you ever get confused and try to land on a non-existent platform – or simply fall too far – Sylvia is saved from death by a small parachute that opens and glides her safely down to the starting position.

The manual is witty and contains some useful hints. Controlling Sylvia is surprisingly easy considering the wealth of movement options. Unfortunately, the keys are not redefinable, although the ones chosen are fairly standard and most people should have no problems using them.

Overall, you'll enjoy The Exotic Adventures of Sylvia Lane as much or as little as you want. The game is not intended to show off the Acorn's graphical capabilities, but simply to be fun to play. In that alone, it succeeds and I would recommend it to anyone who is bored with technical expertise and just wants to *play*.

Paul Mason

● *Entry to the first level*

● *Four down, sixteen to go*

PRODUCT SPOTLIGHT

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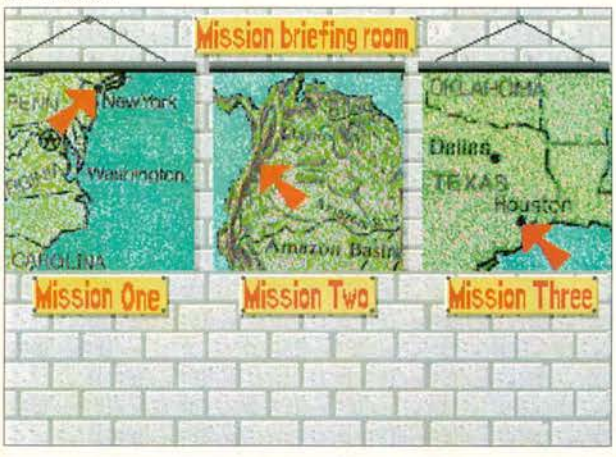
● *Choosing the mission*



Carnage Inc

...in the demolition business

PRODUCT SPOTLIGHT

Price: £25.95
Supplier: The Fourth Dimension, 1 Percy Street, Sheffield S3 8AU
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IN SHORT, Carnage Inc is Pandora's Box. Well actually, that isn't entirely fair – it's more Pandora's Box in the 23rd century. Instead of guiding a weedy mage around a ghostly city, you must direct an unarmed Mk III Cyberdroid around the Daa'vit system.

Your task is to infiltrate, provocate and annihilate, and once again the back-room boys have thought of everything, except weapons.

You are transported to a landing area and from then on, it's down to you. Since most things either get in your way or try to kill you, a useful starting point is to equip yourself with a gun. I ain't giving anything away, but let me say that it is surprising what people throw away.

Objects that can be interacted with are everywhere. Most move and are humanoid, but the more interesting ones can be picked up, thrown, opened, examined, used or spoken to.

The world is patrolled by seemingly autonomous policemen – most of which do not object to you killing them. Also to hinder your progress are guards and gangsters, not to mention annoying pint-sized robots which are unable to do any harm, but have a tendency to get in the way. To add insult to injury they are too small to shoot.

Like Pandora's Box, this game is full of puzzles that must be solved for keys and the like to be released. The puzzles range from simply opening things and finding interesting contents inside, to quite devious ones such as mending machinery.

Everyone from the novice to the arcade-adventurer extraordinaire should find something to interest them in the puzzle department. *Some* help is provided in the manual but should be used more as a source of amusement than aid.

Control is intuitive and response good. The interface provided is effective but can take quite a while to get used to – having to select your blaster for firing while avoiding a volley of shots from a guard or two can be quite a handful.

Once again, however, the programmers have thought of everything, as the function keys from F5 to F8 can be defined so that a single keypress will automatically select the required object and action.

The in-game graphics are very similar to the original Pandora's Box and as such are very good, with some nice touches to the animation. The game is often action-packed and as such, sound is not really required. A little ditty would be nice – indeed, an appropriate rendition of *Mission Impossible* warms up the pre-game introduction.

As it takes such a long time to complete some puzzles, the current status can be saved to disk. You can either have a specific players disk or you can save to hard disk. Unfortunately, the latter only appears to save the files in the root directory – most untidy. The game can be installed easily on to your hard disk and only requires the first of the three disks to be inserted on start-up.

With such adventure games, it is always helpful to have some sort of score to indicate how far you have progressed. Carnage Inc doesn't keep any scoring system which makes it impossible to tell how long the game will last, although judging by the amount of disk space it takes up, the whole world is rather large, spread over four missions.

Carnage Inc should suit most people with a strategic flair. The new sub-£30 price tag that Fourth Dimension are moving towards means that for those without Pandora's Box, it provides a good value game. However, if you own the original, £26 may be too high for effectively an extra-levels disk set.

Paul Mason

● *The pub is a great place for socialising*

● *Much of the world is harmless...*

● *...but not all of it*

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Power Midi

Ian Waugh concludes his series with hints and tips on power sequencing

NO chat, let's get straight down to business. One of the most vexed questions surrounding sequencing is whether or not to quantise, and if so, by how much.

We've touched on quantisation in previous articles, mainly in relation to drum patterns where it is more of an issue as the drum pattern usually underpins the song itself and a tight rhythm keeps everything together.

Other music lines can benefit from quantisation, too, but many beginners err by quantising everything to its full extent. This can lead to the mechanicalness which is seized upon by the anti-computer music brigade.

As a rule of thumb, listen to a music line and if it sounds okay, leave it alone. If you think the timing could be better, use progressive amounts of partial quantisation until the problem is corrected. This way you preserve some human feel. Check last month's article for details of sequencers with partial quantisation.

If you enter a music line in step-time, random quantise is useful for adding feel. *Inspiration* is currently the only Acorn sequencer of which I am aware with a random quantise function and the package doesn't work on RISC OS 3.

● *Studio 24 Plus' Quantise menu holds a simple Transform function. The Local parameter lets you quantise just part of a track – it's nothing to do with Local On/Off keyboard control*

Toying with tempo

Most pop chart material plays at the same tempo from beginning to end. However, many songs include tempo changes – speeding up (accelerando) and slowing down (rallentando).

The trouble with trying to record them into a sequencer is that the machine doesn't know if you're slowing down or just playing longer notes.

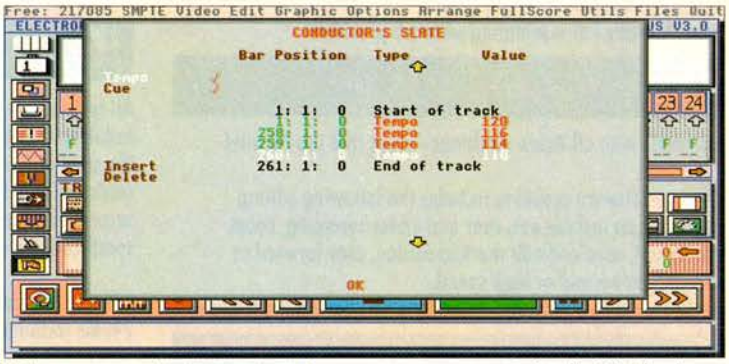
The thing to do is to record the song at a single tempo and program the tempo changes later. There are no Midi messages for handling tempo changes, so here you have to rely on your sequencer's built-in facilities.

Serenade, for example, has a Tempo Map on which you can draw tempo changes. *Studio 24 Plus* uses a Conductor into which you enter a list of tempos for the song. *Rhapsody* lets you specify a tempo value and the number of beats it takes to get there – ideal for automatic tempo changes.

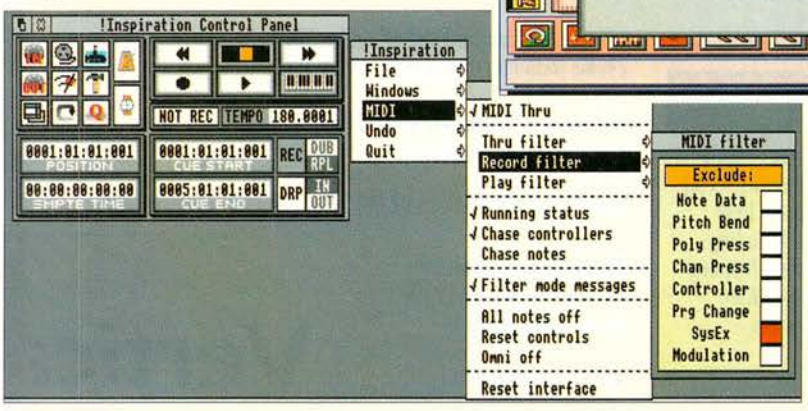
There's more to music than just notes, but how do you display Midi data such as pitch bend, modulation and controller data? Sequencers with an event list will show this data in numeric form. It may be easy to edit but it's not easy to see what the data is actually doing to the music.

Studio 24 Plus and Inspiration have graphic editors which show how the data changes over time so you can see at which point the pitch bend reaches it's peak and exactly on which note the sustain pedal comes in.

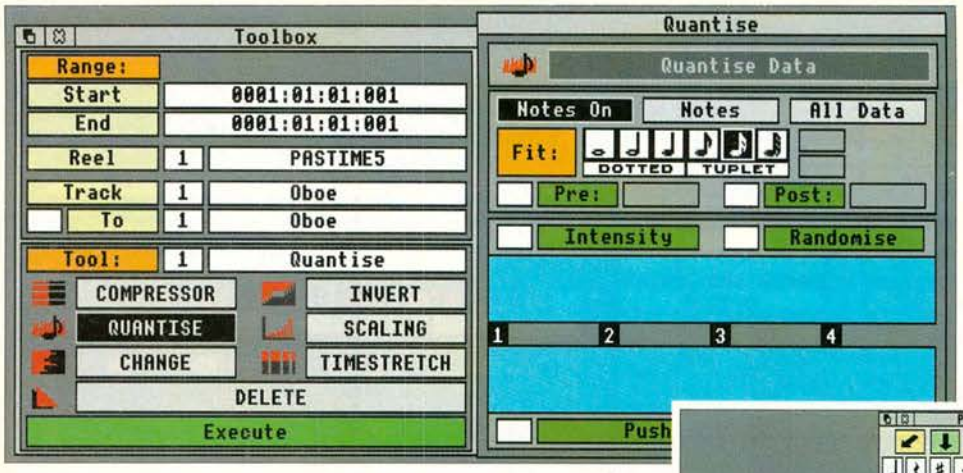
You can alter these displays by drawing in new values with the mouse, creating data where none existed before. You can, for example, add pitch bend or modulation to a track even if your



● *Studio 24 Plus has a Conductor Slate where you enter tempo changes for a piece*



● *Inspiration's Record Filter lets you select data which will be ignored. To record Bulk Dumps, make sure Sys Ex is not excluded*



● *Inspiration's Quantise function is very flexible and includes a Randomise function to add feel to a track*

keyboard doesn't have a pitch bend wheel. Although the unit you are playing the music on must be able to respond to these events.

Of course, you can add pitch bend using an event list, but it's not easy getting a smooth change and you have to enter so many numbers.

Even if your sequencer doesn't have graphic editing, here's a tip for handling pitch bend and controller data – you don't have to record this data while you're playing the keyboard, record it later.

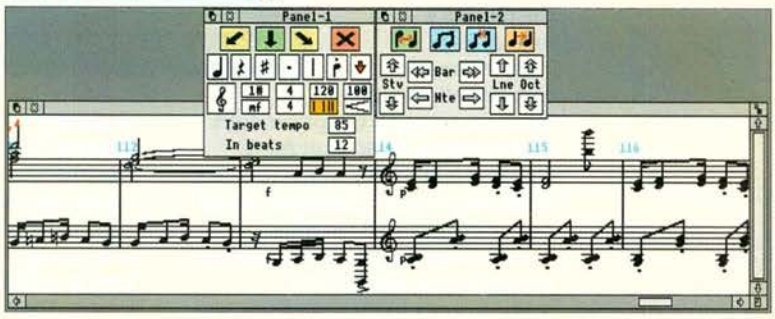
If you record it on to a separate track, it's easier to edit as it's not mixed in with lots of note data. You can record several takes on different tracks without messing up the note data.

Amazing transformations

This leads us nicely into a fascinating area of sequencing – data manipulation and transformation. After all, Midi data is simply a series of numbers so it should be easy to isolate certain types of event and alter them in some way.

Serenade has a Search and Transform function which lets you apply offsets to notes and other types of data. Studio 24 Plus has a Transform Event function in its Quantise menu.

However, Inspiration has the most comprehensive data manipulation function of any Acorn sequencer – it lets you convert virtually any type of Midi data into any other. For example, you could convert, say, modulation wheel data into pitch bend data.



● *Rhapsody's Target Tempo function lets you specify a tempo and the number of beats it takes to change to the new tempo*

You could convert one note into another – useful for changing drum maps – add a velocity offset to only those notes with a low velocity, delete notes outside a specific range and reduce the effect of a controller such as pitch bend or modulation.

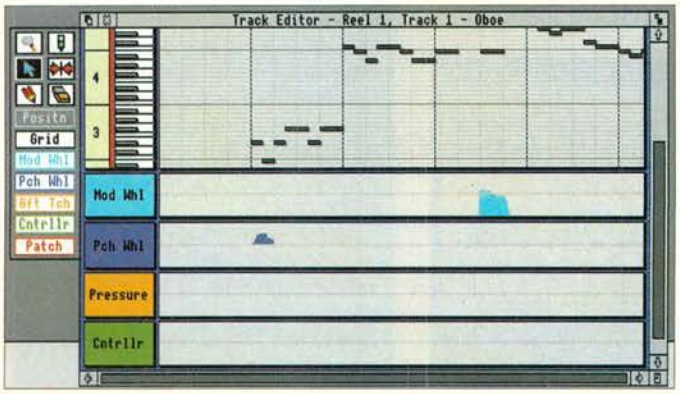
Inspiration also has a powerful scale function which can create an automatic fade by reducing the velocity of notes. It can also be used to scale other events such as pitch bend or even notes to create a glissando.

This is powerful stuff and it can take a while to become fully conversant with the principles involved. You can do some amazing things with it but, as I said before, it only works on RISC OS 2 and is very unlikely to be upgraded, as the programmer has gone on to other things.

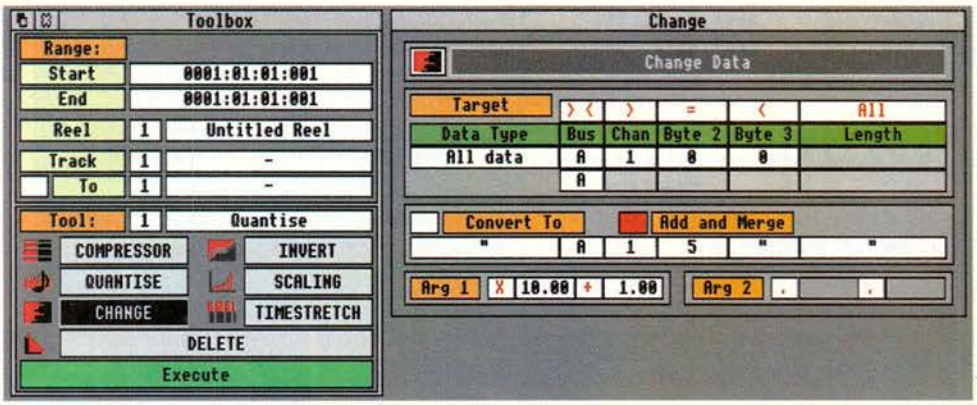
Sound repository

As explained at the beginning of this sequencing series (three months ago), a sequencer can store every nuance of a musical performance except one – sound.

You can use *Program Change* numbers to select the presets, of course, but what you hear is totally dependent on the sounds in



● *Inspiration has several Graphic Editors which make it easy to create and edit data and see where and how it's affecting the notes*



● *Inspiration's Change Data function is the most sophisticated transformation function in any Arc sequencer. It can change virtually any type of Midi data into any other and process data using a wide range of mathematical functions*

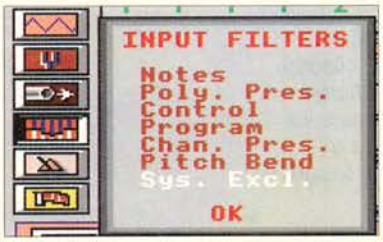
➤

the playback instrument.

However, as virtually all current synths are digital, the parameters used to create their sounds are digital too. In other words they are stored as a series of numbers which can be transmitted via Midi.

The actual format and content of the voice data varies from manufacturer to manufacturer and from synth to synth. The data for a single voice may be several k long. A complete set of voice data for a synth may be up to 100k in size.

So that one synth's voice data doesn't jumble any other type of Midi data, each has a special code. When an instrument sees the code it knows if the following data is intended for it or not. If it is, it reads it. If it's not, it ignores it.



● *Studio 24 Plus has a set of input filters. Make sure Sys Ex is not filtered if you want to record voice data*

These codes and the data which follow them are known as System Exclusive messages – Sys Ex for short – as it is exclusive to each manufacturer and synth. Some sequencers store Sys Ex data just as they do any other type of Midi data. Some sequencers, however, can't handle it at all and ignore all Sys Ex messages completely.

So, using Sys Ex messages – and the right sequencer – you can store the data for all the voices in a piece along with the note data. This is obviously very useful. Imagine coming back to a piece a few months after recording it and wondering what voices you used.

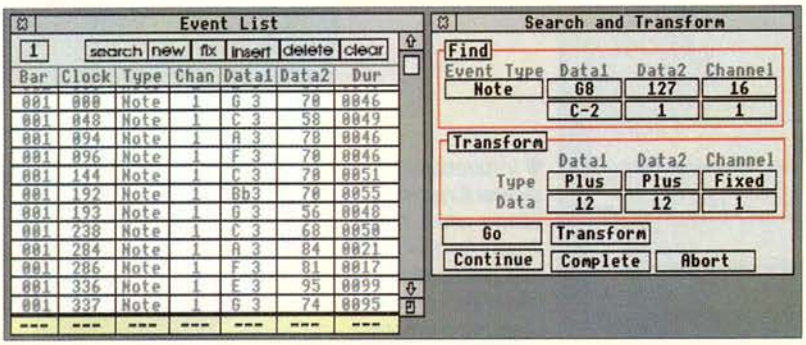
To record Sys Ex data, refer to your synth's manual to discover how to perform a Sys Ex Bulk Dump. Then you simply put the sequencer into record and trigger the dump. Some sequencers have an input filter which can disable the reception of Sys Ex messages. If yours has one, make sure the filter is off before trying to record the data.

Once recorded, you can save the file to disk and simply load it and play it to set up your equipment before loading and playing the song. This is probably the optimum method, but if the data isn't very long you could save it as part of the song. Just arrange it in the sequencer so it plays before the song begins.

The final Power User tip may seem obvious but I wonder how many musicians follow it – know your sequencer. Read the manual and keep in touch with the supplier to check on updates.

After you become comfortable with your sequencer, it's worth reading the manual again to see if there are any points you missed first time through. The more you know about your equipment, the better you'll be able to use it.

Even though your sequencer may be primarily mouse-controlled, check out the keyboard shortcuts.


Event List
search new fix insert delete clear
Bar Clock Type Chan Data1 Data2 Dur
001 000 Note 1 G 3 70 0046
001 048 Note 1 C 3 58 0049
001 094 Note 1 A 3 78 0046
001 096 Note 1 F 3 70 0046
001 144 Note 1 C 3 78 0051
001 192 Note 1 Bb3 70 0055
001 193 Note 1 G 3 56 0048
001 238 Note 1 C 3 68 0058
001 284 Note 1 A 3 84 0021
001 286 Note 1 F 3 81 0017
001 336 Note 1 E 3 95 0099
001 337 Note 1 G 3 74 0095
Search and Transform
Find
Event Type Data1 Data2 Channel
Note G8 127 16
C-2 1 1
Transform
Data1 Data2 Channel
Type Plus Plus Fixed
Data 12 12 1
Go Transform
Continue Complete Abort

● *Serenade's Event List has a Search and Transform function which lets you process certain types of Midi data*

And finally...

The nice thing about sequencing and Midi is the enormous amount of control it gives you over the music.

You don't have to be a technically-accomplished musician, all you need are the musical ideas and those, so far, are something which technology has not managed to produce.

But remember, the object of the exercise is to make good music. No matter how sophisticated the technology you use may be, in itself it will not make bad music good although it may make it less bad.

If you have the musical ideas, technology can help you develop them. To be a Power User you need to be in control.

Master your sequencer and you'll be in control of the technology – not the other way around.

Quantisation theory

Quantisation essentially rectifies sloppy timing by pulling notes which are off the beat on to the beat. First you have to select a quantise value. For example, if you have recorded a piece in which the shortest notes are sixteenths you would select sixteenth note quantisation.

The quantise routine looks at every note and places the start of it on the nearest sixteenth of a beat. If it falls a little late it will pull it back, if it falls a little early it will push it forward. However, it's not capable of reading minds or of artistic interpretation and if a note is too late or too early in the sequence it will be quantised to the wrong beat.

Some sequencers have partial quantisation, which is extremely helpful if you want to avoid the robot effect. It moves notes towards the target beat division by a percentage amount.

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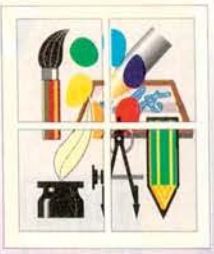

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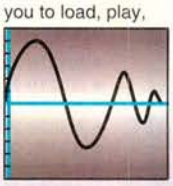

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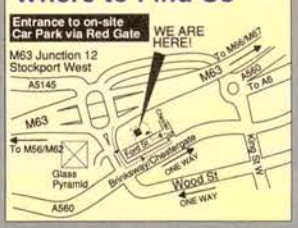

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• A-Link (requires RISC OS 3.1)	£42
• Parallel Link	£25
• 128K RAM Disc	£51
• 256K Flash Disc	£59
• 512K Flash Disc	£85
• Mains Adaptor	£12

Memory Upgrades

All our memory upgrades are easy to install – no soldering required and full instructions supplied.

• A3000 2Mb RAM Upgrade	£29
• A3000 4Mb RAM Upgrade	£99
• A410/1 2Mb RAM Upgrade	£25
• A410/1 4Mb RAM Upgrade	£75
• A420/1 4Mb RAM Upgrade	£50
• A3010 2Mb RAM Upgrade	£39
• A3020/4000 4Mb RAM Upgrade	£70
• A5000 4Mb RAM Upgrade	£79
• A540 4Mb RAM Upgrade	£249

Arc to BBC/Serial Link

Using this simple transfer link, you can transfer all your data from your BBC micro to your Archimedes. The kit is supplied with software and a connecting cable.

• RISC OS 2 version	£15
• RISC OS 3 version	£16

NEW **SPECIAL FINANCE DEAL**

Now everyone can afford an Acorn computer system, hard drive, monitor, printer, etc., with Watford Electronics 12, 24 or 36 months credit facilities. Telephone for details.

ARM3 Turbo Card

Using the latest surface mount technology on a high quality 4 layer circuit board we have reduced the overall size to a mere 53 x 45mm, and the cost to only £99. The ARM3 upgrade will increase the speed of your A300, A400 or A3000 computer by up to 6 times.
The upgrade can be fitted by the user into an A300 or A400 series machine, but for A3000 owners, the ARM3 has to be fitted by ourselves. We will collect, fit and return your A3000 to you at an additional cost of £24.
Owners of A300 series and old A440 models will need a MEMC1A upgrade to use the ARM3.

Special Offer
£99

BUY ARM 3 & RISC OS 3.1 UPGRADE AT THE SAME TIME FOR ONLY £165

RISC OS 3.1 Upgrades

• Single User Software Upgrade	£75
• Hardware Kit (300/440)	£25
• Bulk Software (10) Pack	£329

IDE Hard Disc Upgrades

The Watford IDE interface allows IDE hard discs to be used on any Archimedes computer, speeds in excess of SCSI, but at a fraction of the cost.

Features include:
- Fast 16-bit interface (8-bit on A3000 internal)
- Interrupt driven for background filer operations
- Optional card mounted 2.5" drive
- Supports 2 drives per card
- Write protect and password protection
- Power save mode on supported drives

A300/A400 Internal IDE Drives

Part No.	Capacity	Access Time	Price
ADA 0550	80Mb	17mS	£189
ADA 0530	105Mb	18mS	£219
ADA 0570	210Mb	18mS	£359
ADA 0580	330Mb	16mS	£469

All above upgrades are supplied complete with drive, controller card, cable, software and easy-to-follow instructions.

A5000 Internal IDE Drives

Part No.	Capacity	Access Time	Price
ADA 1030	80Mb	17mS	£149
ADA 0940	105Mb	18mS	£189
ADA 0950	210Mb	18mS	£259
ADA 0880	330Mb	16mS	£399

A3000 External IDE Drives

Part No.	Capacity	Access Time	Price
ADA 1020	80Mb	17mS	£249
ADA 1050	105Mb	18mS	£289
ADA 1070	210Mb	18mS	£399

A3000 Internal IDE Drives

Part No.	Capacity	Access Time	Price
ADA 0770	30Mb	19mS	£129
ADA 0750	60Mb	18mS	£199
ADA 0720	80Mb	18mS	£219
ADA 0730	120Mb	18mS	£259

A300/400 Series IDE Hard Cards

Part No.	Capacity	Access Time	Price
ADA 0800	30Mb	19mS	£149
ADA 0890	60Mb	18mS	£219
ADA 0670	80Mb	18mS	£239
ADA 0680	120Mb	18mS	£279

SPECIAL OFFER
Compression software for only £10 with any Watford IDE Hard Drive

• A300/400 IDE Interface (16-bit)	£79
• A3000 Internal IDE Interface (8-bit)	£85
• External Case & PSU for A3000	£79
• ROM Upgrade for use with RISC OS 3	£16

(only required if DEFS module is less than version 2.10)

24-Hour Credit Card Order Line

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Archi/A3000 Add-Ons

• I/O Podule – User/Analog/1Mhz (Acorn)	£79
• Archi I/O Card – Analog/User (WE)	£59
• A3000 User Port/MIDI Card (Acorn)	£42
• A3000 Serial Upgrade (Acorn)	£19
• MIDI Expansion Card (Acorn)	£65
• MIDI Add-On to I/O Podule (Acorn)	£27
• MEMC1A Upgrade (WE)	£29
• 4 Podule Backplane (WE)	£25
• Fan for backplane (WE)	£10
• 8-bit SCSI Card (Lingenuity)	£129
• 16-bit SCSI Card (Lingenuity)	£149
• 16-bit SCSI Card (Acorn)	£249
• ST506 Hard Disc Podule (WE)	£99
• Scanlight 256 (CC)	£188
• Scanlight Junior (CC)	£180
• Scanlight II A4 (CC)	£275
• Scanlight Professional (CC)	£549
• FAXPack (CC)	£255
• Colour Card (CC)	£245
• Chroma 500 Genlock Card (Wild Vis)	£419
• Chroma 150 PAL Encoder (Wild Vis)	£170
• Chroma Genlock Card (Wild Vis)	£209
• Scanlight Video 256 (Wild Vis)	£199
• Hawk V9 MKII Digitiser (Wild Vis)	£189
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• HiVision Colour Digitiser (HCCS)	£149
• Ultimate Expansion – A5000 (HCCS)	£39
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• Ultimate uPodule – Vision Digi (HCCS)	£79
• Ultimate uPodule – Analogue (HCCS)	£29
• Ultimate uPodule – Serial Port (HCCS)	£49
• Ultimate uPodule – MIDI (HCCS)	£49
• Ultimate uPodule – Scanlight 256 (CC)	£229
• External 3.5" Disc Drive for Arc (WE)	£95
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• Econet Module for Archimedes (Acorn)	£42
• Econet Module for A3020/A4000 (Acorn)	£49
• Econet Module for A4 Notebook (Acorn)	£49
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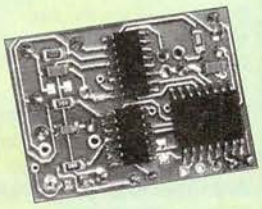
• PowerPad single Joypad (Gamesware)	£25
• PowerPad dual Joypad (Gamesware)	£34

Multimedia & CD-ROM

• Multimedia Expansion Unit	£485
• Multimedia Expansion & 8-bit SCSI	£585
• Multimedia Expansion & 16-bit SCSI	£585
• Toshiba External CD-ROM Drive	£385

VIDI Enhancer



The Watford VIDI Enhancer for the Archimedes 300/400 and A3000 computers, caters for all types of Multiscan and VGA monitors.
A disc of utilities is supplied to allow you to define your own modes, and change existing ones. A desktop mode selector is also supplied.
The Multiscan enhancer is for use with monitors with composite sync inputs, whereas the VGA enhancer is used with VGA, SVGA monitors with separate sync inputs. (A300 series models may require modification for VGA enhancer).

• Multiscan VIDC Enhancer	£19
• VGA VIDC Enhancer	£35

Archi Accessories

• A3000 Dustcover – micro only	£5
• A3000 Dustcover – micro & monitor	£9
• A3010/3020 Dustcover – micro only	£5
• A300/400 Dustcover – micro & monitor	£9
• A300/400 Keyboard Dustcover	£5
• A5000 Dustcover – micro & monitor	£9
• 14" Monitor Dustcover	£6
• Perspex Keyboard Cover	£8
• A3000 Monitor Stand (WE)	£15
• A3000 Monitor Stand (Acorn)	£29
• A3000 Shoulder Bag	£10
• A3000 External Podule Case	£15
• A4 Notebook Carry Case	£35
• A4 Notebook Battery Pack	£49
• A4 Notebook Mains Adaptor	£59
• Archimedes Keyboard Extension Lead	£8
• Archimedes Replacement Mouse (WE)	£29
• Quest Tracerball for Archi (WE)	£26
• Marconi Trackerball for Archi	£69
• Archi Mouse Port Splitter	£10

External Disc Drive Interface

With this interface it is possible to connect any BBC 5.25" or 3.5" floppy disc drive with its own PSU to the A3000 or Archimedes computer. Up to 4 disc drives can be connected. Fully buffered. No soldering required. Not suitable for A3010, A3020, A4000 or A5000.

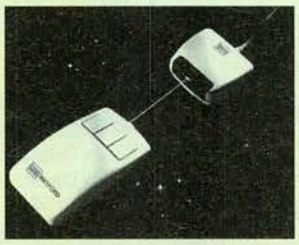
• Arc External Disc Drive Interface	£21
• A300/400 Backplate/Lead	£15
• A3000 Backplate/Lead	£14

Real Time Video Digitiser

The Watford Mono Real Time Digitiser is the most sophisticated digitiser ever designed. It provides a fast and flexible means of capturing images from a camera or video recorder and displaying them in real time.

• Mono Real Time Digitiser	£75
• RISC OS Upgrade for Digitiser	£25
• Colour Filters for camera	£16

Archi Cordless Mouse



Features
- Infra-red signal transmission
- High resolution 200dpi
- Anti-static silicon rubber coated ball
- Auto standby mode after 5 seconds inactivity
- Auto power-off after 20 minutes inactivity

£26

Concept Keyboards

• A4 Standard	£89	• A3 Standard	£95
• A4 Primary	£94	• A3 Primary	£99
• A4 Designer	£104	• A3 Designer	£104
• Universal 2010 Keyboard A4			£104
• Universal 2010 Keyboard A3			£107
• User Port cable for 2010 Keyboard			£9
• Arc Serial cable for 2010 Keyboard			£9
• Concept Designer software for Arc			£22

Scan256 Hand Scanner

If you need a 256 grey scale hand scanner for your Archimedes then look no further.
Scan256 gives you up to 256 grey levels at a maximum resolution of 400dpi and is supported by state-of-the-art software. This makes it the only sensible scanning and image processing solution for the Acorn 32-bit range of machines.

Features include:
- More than one copy of an image in memory at once.
- Highly advanced image processing tools.
- Convolution digital filtering with over 100 filters.
- Adjustable scale and size during scan.
- Save images in industry standard formats.
- True brightness, contrast and gamma controls.
- Selectable scanning modes.
- 105mm scanning width.
- Ability to shear and rotate the image.

only £159

• Scan256 for A3000 (external) (ring for availability)	£169

Note: Scan256 is not suitable for A3010/A3020 or A4000 computers.

Archi MKII Hand Scanner

Watford's Midi hand scanner for the Archimedes and A3000 has a maximum resolution of 400dpi, and a scan width of 4". As you scan the image the results are displayed on screen in real time. You can then save the image at full resolution to get the best quality output or at screen resolution to save on memory. The software is supplied on ROM, so there are no discs to load. Features include: cropping and scaling images, X flip and Y flip, and edge detection allows you to transform solid images into outlines.

• A300/400/A5000 version	£89
• A3000 external version	£99
• v1.10 ROM Upgrade for RISC OS 3	£20

Archi A4 Scanner

The 216mm scanning width can cope with both desktop scanning of single sheets, photographs, etc, with its detachable sheet feeder, or used as an A4 wide hand scanner. 64 grey levels are produced from the scanner at resolutions up to 400dpi. The software included on ROM allows you to adjust contrast and brightness of the scanned image, rotate, shear and cut out sections of the image. The scanner uses a green light source which gives improved contrast on images over conventional red light scanners.

• A4 Scanner for A300/A400/A5000	£199
• A4 Scanner for A3000 (external)	£209
• Sheet Feeder for A4 Scanner	£75

Educational Software

10 out of 10 Early Essentials	£18
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10 out of 10 Maths - Number	£18
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- Eizo F550i 14" £899
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The new Aries A-Scan Pro multiscan monitor offers high-definition flicker-free display at a price that is affordable.

- 14" high resolution colour display
- 0.28mm dot pitch, non-glare tube
- 29KHz to 70KHz horizontal frequency
- Low radiation Swedish MPRII standard
- 1280 x 1024 non-interlaced
- complete with connecting cable (15pin VGA)

£249

Aries Monitors

Aries 6000 15" Monitor
- 15" high resolution colour display
- 0.28mm dot pitch, non-glare tube
- microprocessor control
- 29KHz to 70KHz horizontal frequency
- front panel controls
- complete with connecting cable (15pin VGA)

£299

Aries 7000 17" Monitor
- 17" high resolution FST colour display
- 0.28mm dot pitch, non-glare tube
- 1280 x 1024 @ 70Hz non-interlaced
- microprocessor control
- 29KHz to 70KHz horizontal frequency
- complete with connecting cable (15pin VGA)

£575

Aries 75601 17" Monitor
- 17" high resolution FST colour display
- 0.28mm dot pitch, non-glare tube
- digital controls with LCD panel

£695

Aries 7500 17" Monitor
- 17" high resolution colour display
- 0.28mm dot pitch, non-glare tube
- 29KHz to 75KHz horizontal frequency
- front panel controls
- complete with connecting cable (15pin VGA)

£525

Cables

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- BBC to Philips 8833 (6pin - 8pin) £3.50
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	Serial	Parallel
2 to 1	£27	£29
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4 to 1	–	£75

256K Multi Spoolers

These parallel auto printer sharer switches have built-in 256K buffers.

- 2 in / 2 out £99
- 4 in / 2 out £115
- 8 in / 1 out £149

Please note that cables are not supplied with the printer sharers, but are available from £5 each. Check when ordering which are required.

24hr Credit Card Order Line

Tel: 0582 745555 or 487777

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Canon LBP4 Plus	4ppm	£639
Canon LBP4 U	4ppm	£359
Canon LBP8 Plus IIIR	8ppm	£1420
Canon LBP8 IV 600dpi	8ppm	£932
Epson EPL4300	4ppm	£520
Epson EPL5000	6ppm	£435
Epson EPL5200	6ppm	£489
Epson EPL7500PS	6ppm	£1135
Fujitsu VM600	6ppm	£539
HP LaserJet 4L	4ppm	£456
HP LaserJet 4ML	4ppm	£757
HP LaserJet 4P	4ppm	£737
HP LaserJet 4MP	4ppm	£1047
HP LaserJet 4	8ppm	£998
HP LaserJet 4M	8ppm	£1369
HP LaserJet 4SI	16ppm	£2199
HP LaserJet 4SIMX	16ppm	£3325
NEC Silentwriter S62P	6ppm	£883
NEC Silentwriter S102	6ppm	£914
NEC Silentwriter 290	8ppm	£1125
NEC Silentwriter 290P	8ppm	£1449
OKI OL410ex	4ppm	£585
OKI OL400ex	4ppm	£418
Panasonic KX-P4410	5ppm	£445
Panasonic KX-P4430	5ppm	£579
Panasonic KX-P4440	11ppm	£535
Panasonic KX-P4455 PS	11ppm	£1249
Star LP4 Postscript	4ppm	£759
Star LS5	5ppm	£449
Star LS5 EX	5ppm	£548
Star LS5 TT	5ppm	£739
Star LP8 III Postscript	8ppm	£1125

Laser Consumables

Toners, Drums, Developers
- Canon LBP4 / Star LP4 Toner £52
- Canon LBP8 III / Star LP8 Toner £59
- Canon LBP8 IV Toner £75
- Epson EPL4000/4100/4300 Toner £55
- Epson EPL4100 Photoconductor Unit £89
- Epson EPL5000/5200 Toner £89
- Fujitsu VM600 Toner £89
- Fujitsu VM800 Toner £109
- HP LaserJet IIP/IIIP Toner £48
- HP LaserJet III/IIIP Toner £58
- HP LaserJet 4/4M Toner £72
- HP LaserJet 4L/4ML Toner £55
- NEC Silentwriter Toner £84
- Panasonic KX-P4410/4430 Toner £22
- Panasonic KX-P4410/4430 Drum £109
- Panasonic KX-P4410/4430 Developer £79
- Panasonic KX-P4451/4455 Toner £19
- Panasonic KX-P4451/4455 Drum £93
- Panasonic KX-P4451/4455 Developer £80
- OKI OL400/OL800 Toner £18
- OKI OL400e Toner £17
- Qume Crystalprint Toner £84
- Qume Crystalprint Drum £189

Laser Accessories

- HP Adobe Postscript cartridge - III/IIID £359
- JetPage Postscript cartridge - III/IIIP £225
- HP Postcript module - LJ 4 £270
- Lower Paper Cassette Tray - IIIP £115
- Envelope Feeder - LJ4/4M £199
- 500sht Paper Cassette - LJ4/4M £205
- LaserJet font cartridges from £79
- JetDirect cards for LaserJet 4/4M £359
- Ozone filter for Panasonic KX-P4420 £9
- Ozone filter for Panasonic KX-P4450 £20
- Appletalk interface - LaserJet III/IIID £135

Laser RAM Upgrades

Memory Upgrades

• Canon LBP4 1Mb RAM		£105
• Canon LBP8 2Mb RAM		£125
• HP LaserJet II/IID	1Mb RAM	£60
	2Mb RAM	£96
	4Mb RAM	£142
• HP LaserJet III/	1Mb RAM	£49
	2Mb RAM	£80
	4Mb RAM	£132
• HP LaserJet 4/4M	1Mb RAM	£69
	2Mb RAM	£75
	4Mb RAM	£159
	8Mb RAM	£299
• Panasonic 4420	1Mb RAM	£59
	2Mb RAM	£89
	4Mb RAM	£149
• Epson EPL4100	2Mb RAM	£120

Star Printers

	Printer	CSF	Ribbon
• LC15	£186	£135	£5
• LC20	£102	£60	£4
• LC100C	£117	£65	£9
• LC24-15	£245	£135	£5
• LC24-100	£140	£69	£5
• LC24-20 MK2	£175	£65	£5
• LC24-200C	£205	£65	£12
• LC200C	£151	£65	£12
• SJ-48	£169	£43	£16
• SJ-144	£434	–	£POA
• XB24-200C #	£324	£80	£12
• XB24-250C #	£389	£139	£12
• ZA200 #	£260	£89	£12
• ZA250 #	£324	£139	£12
• LC24-30	£POA	–	–
• LC24-300	£POA	–	–

• 8K Serial interface - LC20/24-20/200	£52
• Serial interface - XB24/ZA200/250	£52
• Black ribbons for colour printers	£5

NEC Printers

	Printer	CSF	Ribbon
• P22Q	£181	£59	£6
• P32	£235	£59	£6
• P62	£339	£79	£8
• P72	£395	£115	£8
• P90	£577	£115	£8
• Jetmate 400	£169	–	–

• Black ribbon for P20/P30	£6
• Black ribbon for P60/P70/P90	£8
• Colour ribbon for P60/P70/P90	£14
• Colour Option for P60/P70	£59

Fujitsu Printers

• DL1250 dot matrix printer	£315
• B100 inkjet printer	£159
• B200 inkjet printer & CSF	£215
• Ink cartridge for B100/B200	£14
• Ink Refill for B100/B200	£10

Citizen Printers

• 120D+	£93	• Swift 200	£178
• PN48	£179	• Swift 240	£180
• Swift 90	£132	• Swift 240C	£193
• Swift 90C	£198	• ProJet 2	£220

• Swift 24/240 Black ribbon	£4
• Swift 24/240 Colour ribbon	£13
• 120D Black ribbon	£4
• CSF for Swift 24/240/200	£75
• Citizen printer driver for Archimedes	£15

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Hewlett Packard Printers

• DeskJet 510 mono	£198
• DeskJet 500 Colour	£335
• DeskJet 550 Colour	£398
• DeskJet 310	£169
• DeskJet 1200 Colour	£931
• DesignJet 600	£4999

Accessories

• DJ500 black ink cartridge - std capacity	£16
• DJ500 black ink cartridge - hi capacity	£23
• DJ500 colour ink cartridge	£25
• Black ink refill for DJ500	£10
• DJ1200 black ink cartridge	£22
• DJ1200 colour ink cartridge	£26
• Paintjet black ink cartridge	£17
• Paintjet colour ink cartridge	£27
• CSF for DeskJet Portable	£49
• Carry case for DeskJet Portable	£49
• FX Emulation cartridge (500 mono)	£45
• 256K RAM Cartridge for DeskJet	£69
• WordPerfect font cartridge	£89
• Dustcover for DeskJet 500/550	£6
• Archi printer driver for DJ550C	£15
• Turbodriver for DeskJet/LaserJet (only £39 when purchased with HP Printer)	£42
• 50x A4 Transparencies for DJ (636G)	£40
• 50x A4 Glossy Paper for DJ (636J)	£40
• 50x A4 Cut sheet Paper for DJ (636Z)	£15
• Deskjet 310 Colour kit	£49

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• LaserJet 4, 4M	£170
• LaserJet 4Si	£505
• Mono DeskJet & DeskWriter	£55
• Colour DeskJet & DeskWriter	£65

Integrex Printers

• ColourJet 2000	£599
• ColourJet Series 2	£335
• CSF for ColourJet Series 2	£45
• BetaJet	£185
• CSF for BetaJet	£43
• Black ink cartridge - ColourJet 132	£14
• Colour ink cartridge - ColourJet 132	£23
• 100 A4 Transparencies	£55

Epson Printers

	Printer	CSF	Ribbon
• LX400	£92	£69	£4
• LX100	£115	–	£4
• LX850+	£135	£69	£4
• LX1050	£204	£125	£6
• FX870	£265	£47	£4
• FX1170	£335	£69	6
• LQ100	£122	–	£4
• LQ570	£204	£39	£4
• LQ870+	£359	£39	£6
• LQ1060	£585	£155	£6
• LQ1070+	£310	£69	£6
• LQ1170	£445	£69	£6
• LQ2550	£669	£360	£6
• SQ870	£419	£170	£23
• SQ1170	£560	£155	£23
• SQ2550	£669	–	£23
• Stylus 300	£169	–	£10
• Stylus 800	£199	–	£10
• Stylus 1000	£355	–	£10

• Serial I/F - 0K	£28	Serial I/F - 8K	£75
• LQ100 Tractor Feed			£29
• LQ800/850 Tractor Feed			£69
• LQ2500 Tractor Feed			£90
• Transparencies for Stylus 800 etc			£35

Canon Printers

	Printer	CSF	2nd Bin	Ink
• BJ10sx	£165	£43	–	£16
• BJ200	£244	–	–	£16
• BJ230	£280	–	–	£16
• BJ300	£305	£88	£88	£12
• BJ330	£369	£92	£92	£12
• BJC600	£	–	–	–
• BJC800	£1219	–	–	–

• BJC600 ink cartridge: Black £6 Colour £7	
• BJC800 ink cartridge: Black £16 Colour £20	
• Battery pack for BJ10ex/10sx	£33
• Black ink refill for BJ10ex/BJ10sx	£12
• Turbodriver for BubbleJet & BJC (only £39 when purchased with Canon Printer)	£42

Panasonic Printers

	Printer	CSF	Ribbon
• KX-P1170	£98	£59	£7
• KX-P1123	£124	£59	£7
• KX-P1624	£264	£126	£8
• KX-P1695	£267	£126	£8
• KX-P2180M	£126	£69	£7
• KX-P2123M	£144	£69	£7
• KX-P2124	£215	£89	£7
• KX-P2624 #	£272	£126	£8
• KX-P2023	£158	£	£8

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• Dustcover for 80 column printers	£6
• Serial interface for above printers	£46
• 32K Buffer for above printers	£16
• Colour kit for 2180/2123/2124	£37

Printer Stands

• 80 column Perspex printer stand	£14
• 132 column Perspex printer stand	£18
• 80 column Professional printer stand	£16
• 132 column Professional printer stand	£25

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• 9.5" x 11" fanfold paper - 1000 sheets	£7
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• Brother M1009/GLP	£2.95
• Epson EX800/EX1000 Black	£6.00
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• Epson LX80/LX86	£4.00
• Epson LQ400/550/800/850	£5.50
• Epson LQ1050/2500	£12.00
• Epson LX400/800	£3.50
• Kega Taxan KP810	£6.00
• NEC P2200	£4.50
• Panasonic KX-P1080/81	£7.00

Dustcovers

• BBC Model B/B+	£6.00
• BBC Master 128	£6.00
• Citizen 120D	£6.00
• Citizen Swift 24	£6.00
• Epson LQ400/LX400	£6.00
• Epson LQ570/LQ870	£6.00
• Epson FX80/FX800	£5.00
• Panasonoc KX-P1170/KX-P1180	£6.00
• Panasonoc KX-P1124/KX-P11241	£6.00

BBC Software

- Logotron Logo (ROM) £43
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- View 3.0 (ROM) £45
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- ViewStore (ROM) £36
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- InterWord (ROM) £36
- InterSheet (ROM) £37
- InterChart (ROM) £25
- InterBase (ROM) £49
- Mega3 - Word/Chart/Sheet (ROM) £76
- SpellMaster (ROM) £42
- WordWise Plus (ROM) £38
- WordAid (ROM) £24
- View Printer Driver Generator (Disc) £12
- View Printer Driver (ROM) £29
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- Fun School 3 5-7yrs (Disc) £17
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- AMX Stop Press (ROM/Disc) £18
- Page Fonts for Stop Press (Disc) £13
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BBC Accessories

- 32K Shadow RAM Card £39
- Solderless ROM Board £32
- 32K ROM/RAM Card £39
- 64K ROM/RAM Card £52
- 128K ROM/RAM Card £83
- Sideways ZIF Socket System £18
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- Master Quad ROM Cartridge £14
- Data Duck £14
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- VIDC video controller £39
- IOC input/output controller £35
- Arc keyboard controller £29
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- A300/A400 Power Supply Unit £89
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- BBC B Power Supply unit £59
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- Master 128 Battery Pack £5

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- PC Cleaning Kit £7
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- Acorn ADFS ROM £25
- Disc Filling System Manual £6.95

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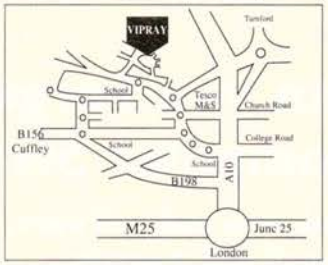

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Sounding off

Ian Waugh looks at the latest musical package from a new company

PRODUCT SPOTLIGHT

Product: Sound Advice
Price: £39.95
Supplier: The Really Small Software Company, Olivers Hill, Ashburn, Battle, Sussex, TN33 9PE.
Tel: 0435 830467

JUST when you think Clares is hogging all the music programmers – and long may they continue – along comes a new software house with a new program – and a budget buy at that.

Sound Advice was developed by one man – and you can't get a much smaller software house than that, hence the name of the company. By his own admission he is not a musician and it shows in some areas, although the program contains many interesting musical touches.

The package consists of three programs of which the first is **MusicEd** a 24-track pattern-based sequencer. The main edit window takes the form of a piano roll or grid editor. You can alter the scale of the grid so a single vertical division represents anything from semi-quaver to a semi-breve.

These divisions are selected by number according to computer rules, not musical ones. So a value of 16 represents a 16th note, 32 an 8th note, 64 a quarter note and so on. You can select any time signature up to 16/16, but the grid lines still think in 4/4 even with compound time signatures such as 6/8. In 4/4 time, each pattern can be 256 bars long.

You can lock notes to the grid so they are forced to these beat divisions. Also insert and delete notes, but to alter their length you have to select a different option from the Edit menu. Single Entry lets you enter lots of notes of the same duration without having to specify the length each time.

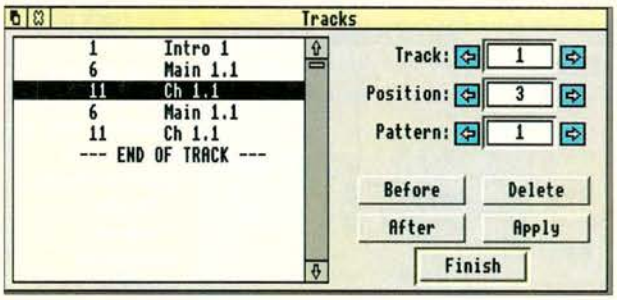
You can't drag a note to a new pitch – it must be deleted and a new note entered – although a section of notes can be highlighted and transposed.

The bar numbers are at the top of the editor above octave 11 so if you are working in the middle range they can't be seen. The pattern window, as opposed to the pattern editor window, shows the current position of the cursor, but again, in numeric rather than musical terms – bars are divided into 256 internal beats rather than sub-beat divisions.

You can perform the usual cut, copy and paste operations on a pattern or a part of it. There are insert, overlay and demerge – ensures there are no two identical notes with the same start time – functions and you can save a pattern to disk for use in another song.

Effects

An effects menu lets you loop a highlighted section of a pattern – a very powerful feature and well implemented here. There are also intriguing invert and reverse functions which are great fun – Bach is a firm favourite for this sort of manipulation, and his music comes out of it very well indeed.

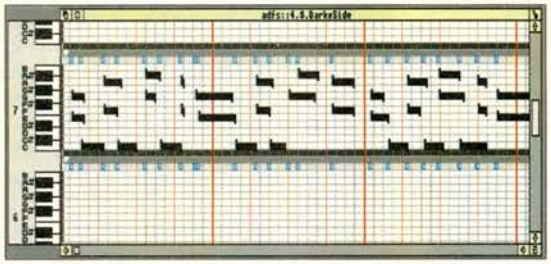


● *The Tracks window is where you enter a list of patterns into each track. It works although it's not the most intuitive way of producing arrangements*

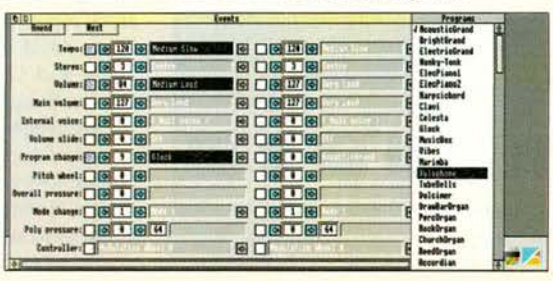
MusicEd has an novel way of handling events like tempo, volume, sound selection and Midi messages. All these events can be selected and their parameters set in an Events window. The settings are then clicked into a pattern where they appear as a small box.

Clicking on the box calls up the Events window allowing you to amend the events. This works fine for individual events such as tempo and program changes but it's not easy trying to fine tune a set of pitch bend messages.

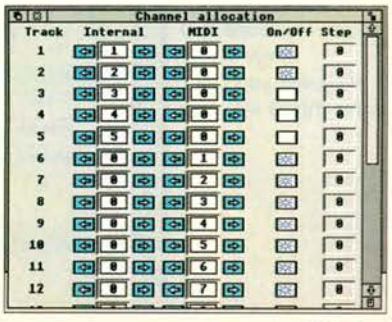
There's also a Find and Replace function. You can use this to change ➤



● *MusicEd's main edit page is a piano roll editor. The blue rectangles show the positions of event changes ...*



● *...which you can see in the Events window. You can insert and amend all sorts of data here and select Midi sounds by name*



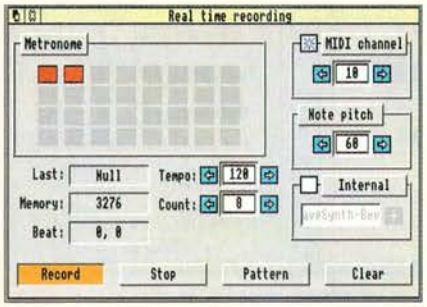
● *In the Channel allocation window you can assign each track to an internal voice or Midi channel and switch the track on and off*

internal voices to Midi sounds, for example.

Sounds can be selected by name, which is excellent – all sequencers should work this way. The program loads with a General Midi voice set but you can load others and create your own quite easily.

Having entered some patterns, you link them together in the track window. There are 24 tracks and you can assign a list of patterns to each one. Patterns can be placed at any position and used in a track several times.

During playback, all tracks play simultaneously but it's up to you to make sure they play back in sync. It's certainly not the most intuitive way to construct a piece of music.



● *Real-time recording has its own window. You can set up the metronome to play over Midi. However, the accuracy with which it captures notes is not very good*

In the Channel allocation window, each track can be assigned a Midi channel. It helps to think of each pattern as a single instrument. If you have several Midi podules, you can access up to 64 channels although in practice this is limited to 24 – a different channel for each track.

Recording

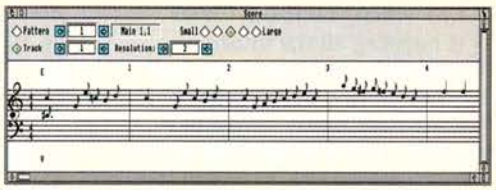
Recording in real-time from a Midi keyboard is done from another window. A filter can remove unwanted data such as aftertouch and Sys Ex during recording. The music does not go directly into a pattern after recording but into a storage area. If you're happy with the recording you can transfer it to a pattern.

However, the accuracy with which the program grabs the notes is very poor – don't bother with any pyrotechnics because the timing will be lost. You have to record slowly and very carefully and will almost certainly have to quantise the notes afterwards.

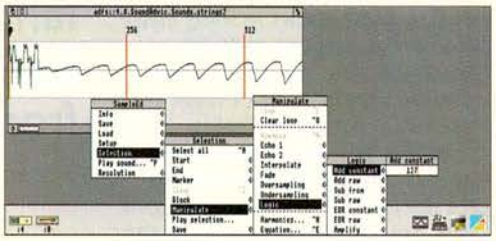
Step-time recording involves selecting a duration and playing a note on the keyboard. You can enter notes from an on-screen keyboard or a large on-screen stave, too. However, you can't enter chords in step-time.

Before you can playback via Midi you have to make sure that the Midi settings in the Channel window are on and then you have to insert the pattern into a track, something the manual does not make clear.

MusicEd has a score display which can show individual patterns or full tracks in very basic notation. It's rough and ready and you can't edit it or print it out.



● *The score window shows the notes in a rough and ready notation format although you can't edit them or print them out*



● *SampleEd is a sophisticated sample editor with lots of powerful and interesting manipulation functions*

Sample and convert

In addition to MusicEd, Sound Advice includes a sophisticated **Sample Editor**. It can not only edit samples but convert and save them in all the major formats such as Armadeus, Tracker, DI Tracker and SoundSynth as well as sound Modules.

It has extensive edit and manipulation functions such as echo, interpolate, fade and logical editing – the mathematical processing of the sample data – heavy stuff, eh?

The third program is **Converter** which will convert Maestro, Rhapsody, Soundtracker and Desktop Tracker files into MusicEd format. It doesn't always get the conversion 100 per cent right, partly because the sequencer only has 24 tracks, but it works quite well.

The manual is very helpful and even lists some known bugs – although none are disastrous. These are being fixed and updates will be supplied to users free of charge.

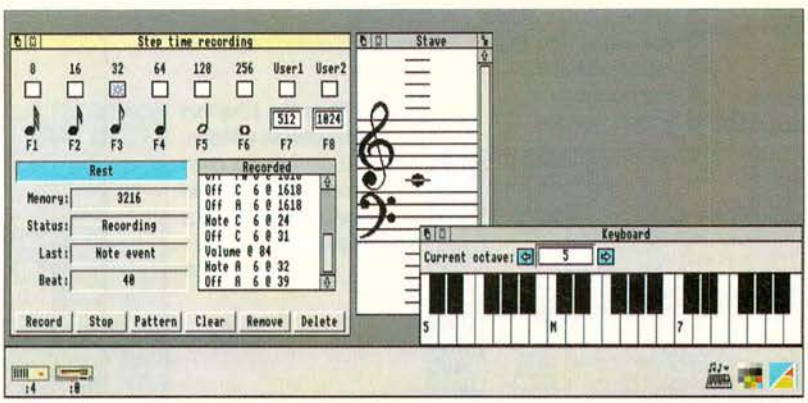
The program has several shortcomings and operational idiosyncrasies. The main ones, unfortunately, are to do with the basic recording functions and music arrangement process. It also lacks support for Standard Midi Files, which means it can't load and play the thousands of commercial and PD music files which are readily available.

Summing up

Look at all Sound Advice's features and it's difficult to see how you can fault it for the price. However, its design betrays the programmer's non-musical background and some of the functions will simply be too convoluted for many musicians.

MusicEd has the potential to be much more heavyweight, but it really it needs some input from a musician and certain areas need redesigning. The Sample Editor and Converter are impressive, all the more so as they are included with the sequencer.

If you're on a very tight budget, Sound Advice gives you lots to play with for your money. Just be prepared to adapt to its way of working.



● *You can enter notes in step-time from a Midi keyboard, an on-screen keyboard or a large stave. However, you can't enter chords this way*

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Written in

Mike Cook continues his computer guided telescope project

LAST time we looked at the serial interface of our Computer Guided Telescope, now let's turn our attention to how we can get a display at the telescope end.

If you remember my idea is that there should be a box of electronics at the telescope and a long lead going into the house to the computer, although if you're rich enough to have an A4 portable you don't need this part. You can simply place the computer close to the telescope and let the computer display show you where it is pointing.

However, I know that most of you are like me and do not have that luxury, therefore I looked at ways to get a useful display. A look through the catalogue revealed several different types of display but the application rather narrowed down the choice. For a start LCD displays were out, they work off reflected light and as it is going to be dark there is not a lot of it about.

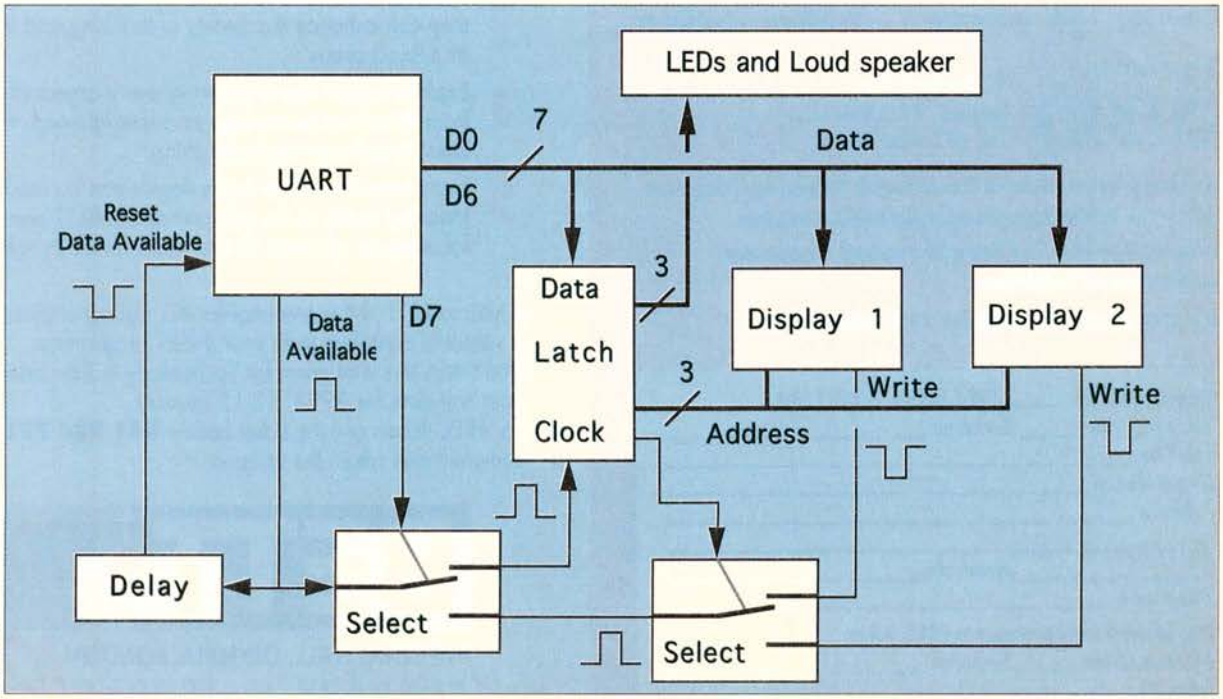
True you can get back-lit displays but that might compromise our visual night adaptation, in other words ruin our light sensitivity. Fortunately our night vision is not affected as much by red light and so a red LED display became the obvious choice.

Choose your display

At first a seven-segment display sounded attractive but that did restrict me to only displaying numbers and a few odd-shaped characters. Fortunately there were three different types of dot matrix display available and so I sent for the data sheets on these. For once the most expensive was not the best for my purpose and so I chose the middle priced HDLR2416 from Hewlett Packard.

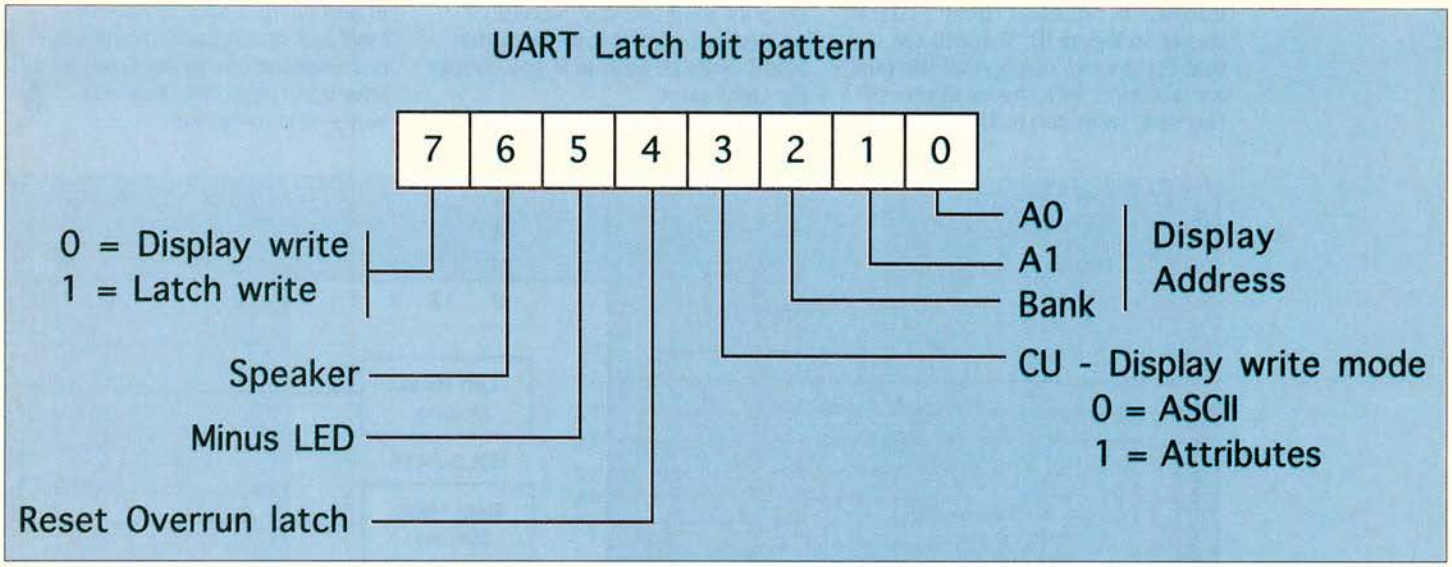
Ironically there are a range of these devices with bright displays being at a premium, but in this application we don't want a bright display. In fact one of the attractive features of this display is that it can be set to one of eight brightness steps from software. The HDLR2416 is a four character 5x7 LED dot matrix display with built-in ram, ascii decoder and LED driver.

All the letters and numbers are available along with a few Greek characters, just the thing for star identification. It has eight registers and is meant to be driven from a computer's data and address bus so it would look like eight adjacent



● *Figure I: The block diagram of the display*

the stars



● *Figure II: The UART Bit Pattern*

memory locations.

To get a character displayed you would simply write the ascii character to one of the memory locations and it would be displayed. Each location has a display register and an attributes register so for four characters you get eight locations.

I wanted more than four display characters because I needed to display the right ascension and the declination to four significant figures. This is further complicated because the declination can be positive or negative.

Too few bits

I decided to compromise on two displays using a rectangular LED in front of one to indicate a negative declination. This still leaves somewhat of a problem, we now have one LED, a 7-bit data bus, three address lines and two display access signals to conjure out of the UARTs eight output bits.

Whenever we are faced with a problem of too few bits controlling too many signals we have to resort to multiplexing. That is where the signals are sent down in small groups and held in latches. This was a tight design but as you can see I made it. If you look at Figure I you'll see the block diagram of the display.

The place to start is the UART, this has not only eight data lines but a signal indicating that new data has arrived. Now we must use this signal to reset itself and if this is done through a delay we have generated a pulse that accompanies each new byte.

The first seven bits of the output are fed in parallel to both displays and a latch, the seventh bit is used to control whether we write to a display or the latch.

We have a further problem in that there are two displays, therefore, when we are writing to a display one of the outputs of the latch controls the selector and channels the data available pulse to the correct display.

It will help if you follow the path of the data available pulse in Figure 1. If the switches are as shown the pulse will arrive at the latches and anything on bits 0 to 6 will be held in the latches – in this way we can set up the display's write address.

When this switch, controlled by bit 7, is turned the other way the pulse is fed through to display 1 and the information on bits 0 to 6 are clocked into it at the address we have previously set up. Finally the pulse can be routed to display 2 by one of the latch's outputs.

Writing to the display therefore involves sending two bytes, one with the address and the other with the character. There is an other slight complication that the display addresses go from right to left, just like significant positions in numbers. Now we could correct for this in software but it is a simple matter to feed the inverse of the latched bits to the display's address.

Three bits spare

This schema leaves three bits spare so I have used them to light the minus LED, reset the overrun circuit and drive a loud speaker. The latter was useful in generating bleeps and clicks to act as audio feedback, greatly increasing the ease of use of the whole system.

Figure II shows the bit pattern that the programmer sees when driving the display. When bit 7 is zero the display is being written to and the other bits should contain the ascii value you want to display. When bit 7 is one the other bits correspond to the labels in the

➤

➤

diagram. Basically the first four bits determine the display address and the top three the extras. Note the way I have arranged them means that the lower three bits look like the address of a single eight character display.

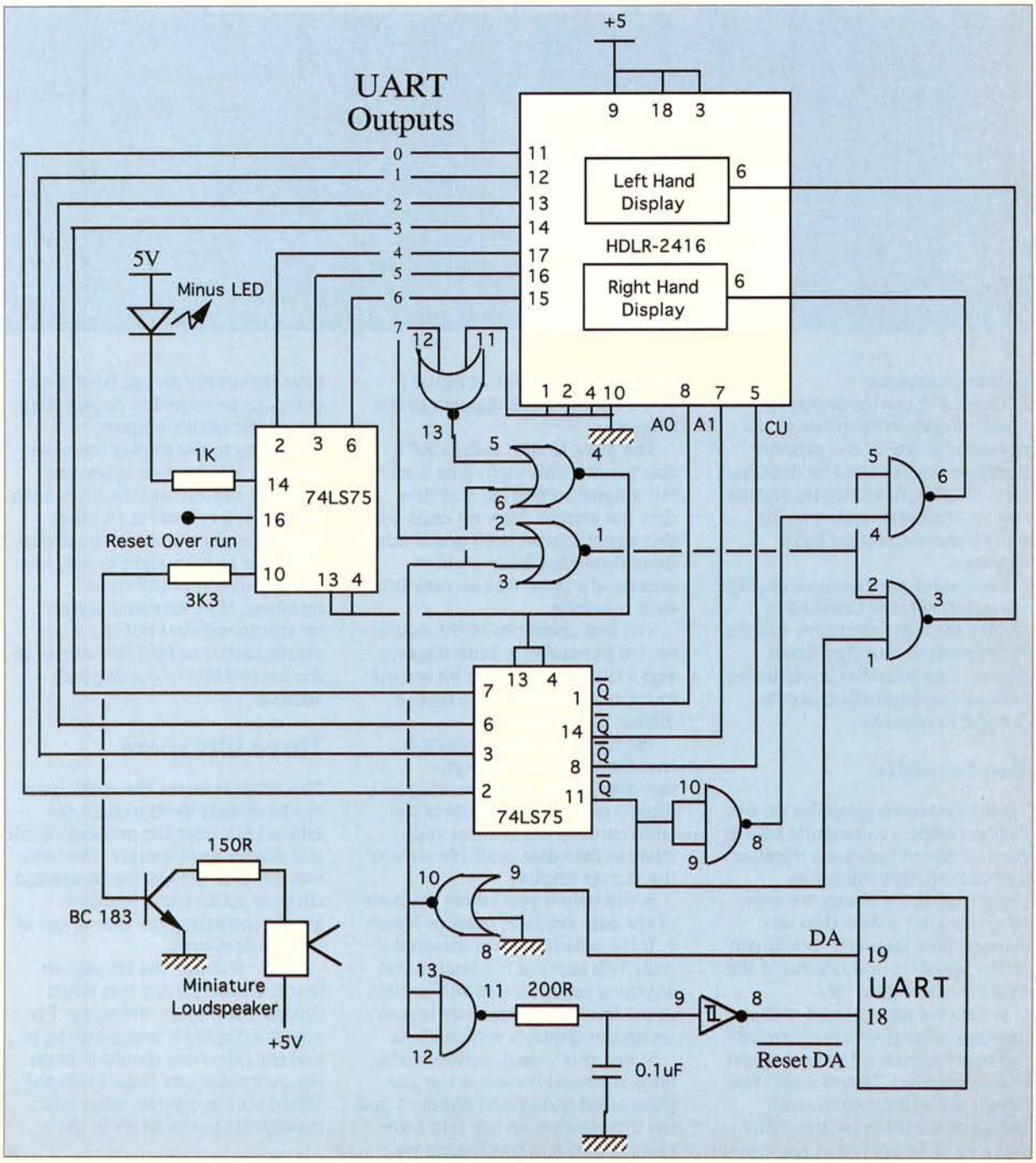
Well that's all very good as a block diagram but how does it translate to an actual circuit? That is shown in Figure III. You will see that for the two displays all the pins are common with the exception of the write pulse pin 6. Therefore to make the diagram look less cluttered I have shown them in one box.

I used two 74LS75 4-bit latches to make up my 7-bit latch so one of them is not used. The select switches were made here from logic gates, this was for two reasons.

First of all they are cheaper than dedicated data switches when we only want two and secondly I needed some pulse inversions that could easily be built in if you choose the right gates.

You will see the first selector is made from a NOR gate and the second from a NAND gate. The delay is manufactured from an RC circuit feeding into a Schmidt trigger inverter. This inverter is one left over in a package from the previous circuitry.

● *So there you have it, we have seen how to build the hardware. In next month's final instalment I will look at construction techniques and what sort of software is needed to drive it. A Happy New Year and may your skies be clear.*



● *Figure III: The Circuit diagram of the display*

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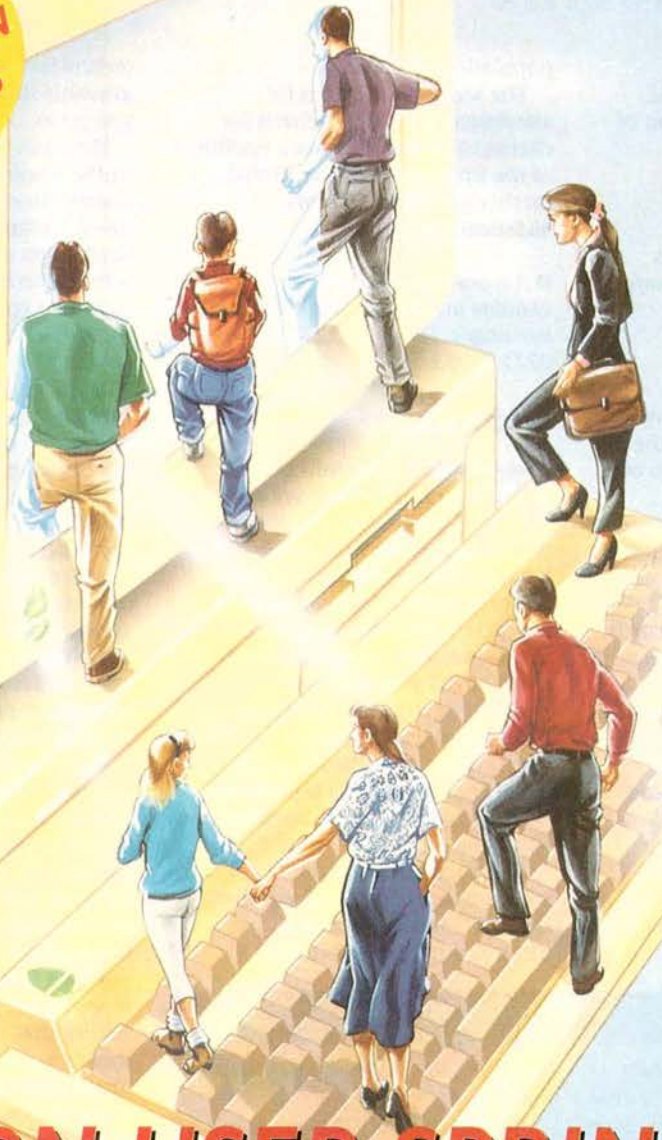

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Icelandic acorns

HAVING visited Iceland earlier in the year at the invitation of Japis – the Acorn dealers in Reykjavik – I was impressed not only by the enthusiasm and dedication of the Archimedes-using teachers but by the quality of the software which has been produced in Iceland.

Due to their geographical position and the language difficulties, Japis have asked me to see if there is any demand in the English-speaking world for two of their products.

One is a professional package for use by dentists which nine Icelandic dentists have been using for some time; they find it the perfect solution for keeping dental records. Among other things it provides a *map* of every patient's teeth, treatment notes and appointment details.

Are there any Acorn-owning dentists who would be interested in finding out if the package could be made suitable for their needs? It does seem a shame that such a first-rate piece of software should be restricted to Iceland – which only has a population of 250,000.

The second package is for astrologers and allows charts for clients to be drawn up in a fraction of the time taken by traditional methods. – **Mike Matson, 4Mation, Devon**

● *Anyone interested can contact 4Mation at 14 Castle Park Road, Barnstaple, Devon EX32 8PA. Tel: 0271 25353*

Brickbats...

IT'S been said before, but I have to say my piece – what is the matter with Acorn? They have the best machine of its kind but they seem intent on keeping it a secret. Advertising appears to be a positive no-no and only twice have I seen it in the national newspapers and then in an apologising manner, stressing the educational angle when their product is capable of holding its own in any business situation.

And then there are the software developers and suppliers. In the PC world, backup is instant, bringing a visit from a technician, while products are available in shops in any town you go to.

But what do I do to get software? In the whole of Harlow with its sizeable town centre and its out-of-town trading complex there is not a single item of Acorn hardware or software to be seen, so I have to write to a company advertising in the magazine and wait up to 28 days.

My nearest dealer is Cannon Computing who is excellent and does all he can to help but if I need anything I can't just go into a shop and buy. Some companies wait three weeks just to acknowledge my order.

In fact it seems to me that the only way to stay sane when applying for information or ordering an item is to post your letter and forget about it. If something does turn up it's a nice surprise and something of a bonus.

That's not all. I went to London and walked the length of Tottenham Court Road – reckoned to be **the** place for electronic goods – there was not one Acorn machine, let alone software, leaving the shelves crammed with PCs of all descriptions.

When is the Acorn world going to get its act together? I get the feeling that Acorn is dying and there's not enough up front to instill confidence in home use, let alone the business world. I want to see Acorn throw its corporate chest out and say *I'm here, I can take the lot of you on.*

The software companies must back Acorn by expanding marketing methods and treating customers as people who make their living for them, not a nuisance who interrupt their daily routine. – **W. Bramham, Harlow, Essex**

● *To blame Acorn for the lack of availability in the shops is a bit unfair. It's true that if, ten years ago, Acorn had charged £300 for the BBC Micro instead of £500 they would have had a much bigger market share and would have benefited enormously. Perhaps Sinclair, Commodore and Atari would not have made the impact they did.*

But no one could have competed against the huge sales machine IBM

PC access

I AM about to purchase an A3010 Learning Curve Pack to upgrade my Beeb and have a series of questions. Firstly could you tell me how well PC software works on the PC emulator? I have been told that some games – such as Elite 2 and WordPerfect – don't come out full size on the screen .

Secondly, can a 5.25in disk drive or tape recorder be fitted into the computer. If a tape recorder can be added is it possible to run software from it? Finally do I need a licence to use a teletext adapter on the A3010? – **Adam Benli, Hurst Green, East Sussex**

● *Taking your last question first, you must have a licence to receive TV transmissions whether you're viewing the pictures or not. But you only need one licence so if you already have one for your television you don't need another one.*

The PC emulator software does run rather slowly, so for continuous use it's not really recommended. Any well-behaved software will function correctly, but packages that try to access hardware directly will probably fail. Screen shape is a function of so many variables that it's hard to say exactly what may happen with a given product.

You may be able to find a 5.25in disk drive interface for an A3010, but those designed for the A3000 may not fit. It's more sensible to use a piece of transfer software, such as MultiLink from Really Good Software (0582 395761) which allows you to keep your BBC Micro set up and transfer software via the serial port.

Connecting a tape recorder to a 32-bit machine is not a viable option and has not been implemented by anyone.

already had in place when they launched the PC. IBM played on corporate ignorance then, and that problem still exists today with the robotic "I must buy PC-compatibles because I've been told that they are the industry standard".

Acorn could do better and have been improving – upsetting Commodore is a good sign – but aggressive marketing has never been seen as a very British trait, and Acorn is a very British company.

...and bouquets

AS A dysabled* student I would like to give my praise to Acorn and all their associated third parties. I have an A420/1 and a PocketBook which I rely on heavily in all areas of my life.

Most people would argue that PCs are better since they are *industry standard*. I strongly believe, due to the evolutionary approach in development, that the internal structure of the PC is one complete mess. Does anyone understand how to utilise the memory on a PC without using hundreds of programs? When will Windows and MS-Dos actually be able to compete with RISC OS 3?

Acorn took a big risk when they entered the 32-bit market which was a radical development from previous 8-bit technology. This was highly successful and now Acorn are a slick and customer-oriented company. RISC OS 3 is very user-friendly and able to handle all the tasks I require from a computer.

I used to have a PC and found it could not cope with my heavy demands. Without my A420/1 and PocketBook I would be completely lost – unable to write, communicate, study or take full advantage of the opportunities available. Acorn has always been very helpful and since I have purchased my A420/1 the quality of my life has increased dramatically. – **Simon Stevens, Coventry**

* *Coventry University Students Union have adopted the term Dysability meaning* ***difficulty*** *in performing a task imposed by society due to physical, learning or sensory characteristics of a person. Replacing Disability, meaning* ***inability*** *to perform a task.*

Putting the boot in

CONCERNING Ben Crowe's letter in the December issue, I have a similar set up – A3000 with a hard disk. I also struggled to establish an auto-booting file as simply pushing the button below the icon in the Save window seemed to have no effect.

Deep in the User Guide – pages 110 and 188 of Edition 2, Issue 1 March 1992 – there is a reference to *Opt4,2 command which seems to do the trick. The default setting would appear to be 4,0 no boot action and no amount of button pushing alters it.

I wondered whether the problem might not be related to having a SCSI drive but it applied equally to an A5000 with an IDE hard disk. Your instructions to Mr Crow include an Opt 3,2 command. Was it a typing error? It appeared to have no impact when I tried it. – **Jonathan R Allen, Henley-on-Thames, Oxon**

● *No, this was not a typo, but you must set the drive to the one you're planning to boot from before issuing the command.*

Not a science

I passed your Comment page from the December issue around a few of the lads on my course – Is it Computer Science or Computer Studies – who found it quite amusing and most definitely agreed with you. Walking past certain members of our departmental staff will never be the same again.

Much as I'd like to, I dare not show it to any of the teaching staff. I do want to get a degree after all. – **Name and address withheld by request**

Speak to me

MY A4000 has 4Mb of ram – and a couple of problems. The internal speaker refuses to work but I can get sound from the headphones. I have checked in the !Configure application and the speaker is enabled and the volume set to maximum.

Neither can I get SWIV to work and have no idea why as it works quite happily on the A3000. Also on games, is the CU ProPad compatible with all games or just the ones which support joysticks? I enjoy Chopper Force and Virtual Golf but are any extra missions/courses planned?

And where can I get clip-art in Imagery format as I enjoy the program and would like to start my own clip-art library. – **Gareth Wallis, Street, Somerset**

● *If your internal speaker doesn't work it's broken and you should take it to an approved dealer to get it fixed. There is a problem with SWIV on ARM250 machines, contact Krisalis (0709 372290) for information. Regarding Chopper Force and Virtual Golf you should contact 4D (0742 769950).*

The ProPad is compatible with any game as the software is used to emulate any key press. Your best option for clip-art is PD libraries, but you should also contact Palette Studio (0923) 894355 as they produce files too.

Some PC answers

I HAVE one of the new 33MHz A5000 with 250Mb hard disk and 4Mb, and I have been very pleased with it. I use version 1.8 of the PC emulator and it goes at a reasonable speed in this much faster machine.

I have found that the following Dos programs work well on it: Word Perfect 5.1, AutoRoute Express, Labels Unlimited, Works 2.00 and 3.00, PaintSpa, WriteOn, Deluxe Paint 2, SuperCalc 5, TimeWorks Publisher 3 and Mini Office Professional.

MS Dos 5.00, 6.00 and 6.20 all work fine. The compaction feature Doublespace on MS Dos 6 works but MEMAKER.EXE only functions on the 386 and 486 PC cards. I haven't been able to get MSBACKUP.EXE to work either.

I hope this is of interest. – **Peter Beale, Swanley, Kent.**

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Cambridgeshire S/W House 23	H.R.S.D. 98	Sherston Software 7
Circle S/W 64	Honormead 88	Soft Sector 98
Colton S/W ..... IFC	I.C.S. (Ian Copestake) Ltd 14,15,16,18	Spacetech 36
Computer Concepts Ltd 29,42	Illusions 98	Technology Matrix 38
Computer Tutorial Services 35	JR Lectronics 86,87	The Datafile 32,98
Contex Computing 88	Jumping Bean 35	The Datastore 62
Cumana 49	Kendal 62	TMJ Computer Software 98
Cypherwrite Publications 98	Kettering Computer Centre 86,87	Turning Tools 70
Dabhand Computing 67	Kingsway Computer Services 70	Uniqueway 86,87
Daco Systems 86/87	Kudlian Soft 35	Vantage One Direct 12,13
Datastream 41	Longman Logotron 9	Vertical Twist 75
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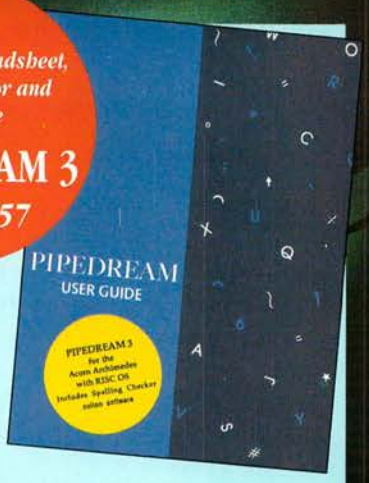

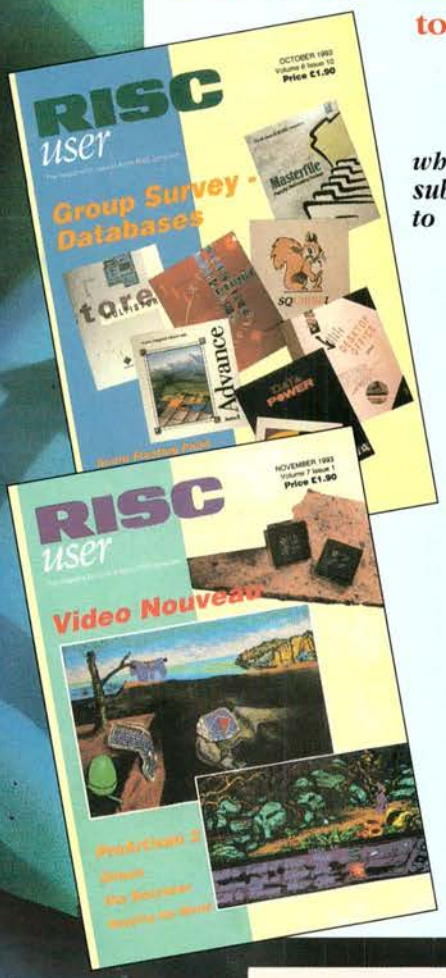

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